

skin diver

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CELEBRATE HALLOWEEN UNDERWATER

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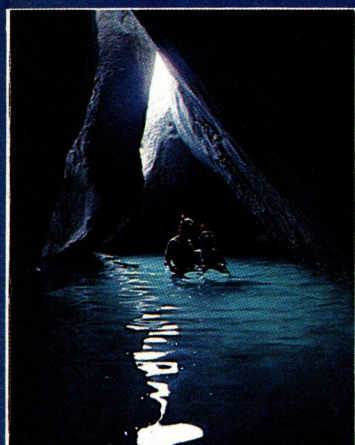
**FALL TRAVEL DIVES:
BONAIRE
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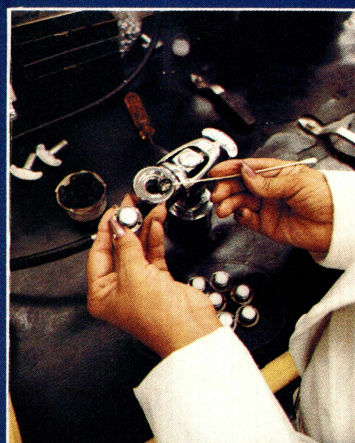
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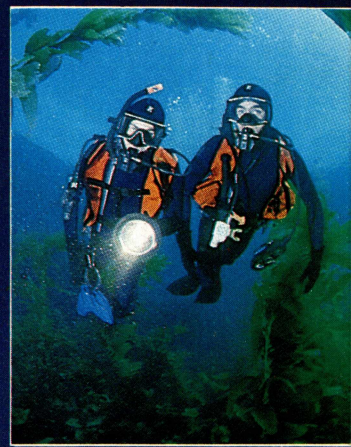


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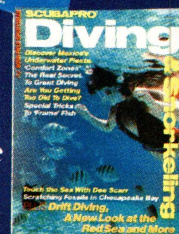
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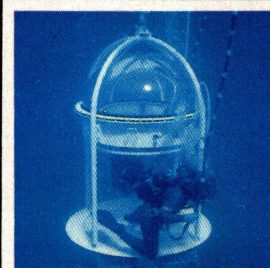
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Photos by LARRY CUSHMAN

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About a third of the world's entry-level professional divers are trained at the Ocean Corporation in Houston. We're the biggest and the best...and the commercial diving companies in our area know it. Last year more than 50 different diving companies hired our people. More divers are hired in Houston than any place in the world. Houston is the oil, offshore construction and commercial diving capital of the world.

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If you want to be a professional diver, contact our Admissions Department. Use the Reader Service Card or call us toll free - (800) 321-0298. You'll be glad you did.

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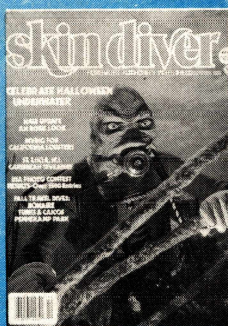
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COVER

Put a little levity in your U/W photo shows—here Chris McLaughlin wears a creature from the black lagoon mask off the Riding Rock Inn, San Salvador. Photo/Geri Murphy. For more on this see page 16.

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SDM Editorial

BY THE PUBLISHER



THE DIVER'S MOST DEADLY DISEASE

Ask new scuba divers about the bends and they're likely to mumble something about bubbles in the bloodstream and pain in the elbow or shoulder. Few have a good understanding of the problem and most pursue a blissful conviction that a couple of hours in a recompression chamber will cure any bends problem. This nonchalant attitude toward the diver's most deadly disease could cost naive divers their lives.

To be perfectly frank, today's diver is not taking the problem of bends seriously enough. Some scuba instructors treat the subject of bends too lightly, in an effort to keep the "fun" in their scuba training. They may be doing their students a disservice by not providing a clear picture of the problem. Students end up viewing bends with ignorant cockiness and little knowledge of its true destructive powers.

It is this magazine's opinion that bends should be declared Public Enemy Number 1 to divers and treated with as much concern as cancer, a heart attack or other serious medical problems.

Let's take a moment to dispel some of the current myths about bends by offering a few key facts every scuba diver should know before entering the water:

Bends can kill—Bends is neither a simple nor minor medical problem. Bends can kill a diver, in spite of first aid and chamber treatment. A number of divers have died from bends hits and this number is growing because the sport is growing. The reasons for bends deaths vary from shock to neurological damage.

Severe hits strike at random—One of the major misconceptions is that serious bends cases result from only deep, long

dives. This is not true. A serious bends hit can result from even the smallest infraction of the decompression tables. Quite often, the diver making a medium depth dive gets a worse hit than the diver making a really deep one. The key to this puzzle lies in where the bubble happens to pop up. A hit in the knee or elbow can result in just localized pain, but a hit in the spine or central nervous system can cause paralysis or other kinds of severe damage. It's like a game of Russian Roulette—not even an expert diving doctor can predict where the bubble is going to pop up.

The chamber is not a cure-all—Many divers are under the illusion that the recompression chamber can quickly cure any and all cases of bends. Nothing could be farther from the truth. The chamber is not a miracle machine. Many divers come out of the chamber in just as much pain as when they entered. This is often because the victim was not transported to the chamber soon enough for effective treatment or because the initial damage was so massive that full recovery is hopeless. Residual effects from a bends hit are common and it takes victims years to fully recover—if ever.

Not all bends symptoms are clear-cut—Most divers expect a case of bends to be preceded by those classic symptoms stated in all textbooks—sharp pains in the elbow, shoulder, knee or other joint. Unfortunately, bends symptoms are not always so clear-cut. A pain in the elbow may never occur. Instead, there may be dizziness, or nausea, or paralysis, or itching of the skin, or a dozen other more subtle signs. Some victims simply pass

out after surfacing. Any strange feelings or neurological disorders after a dive should be immediately suspect.

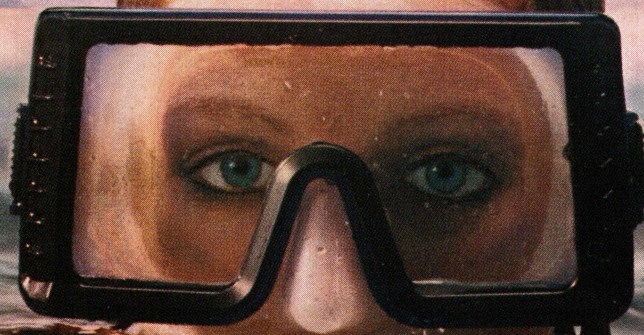
If you think the above information is intended to shock you, you're right. Bends is a serious danger to anyone diving deeper than 33 feet and the risk increases with repetitive dives.

The best way to protect yourself from the dangers of the bends is to take steps to avoid getting hit in the first place. Here's a checklist which may help.

- ✓ Always dive well within the no decompression limits.
- ✓ Keep a careful check on your depth and bottom time.
- ✓ Ascend slowly, well within the 60 foot per minute rate.
- ✓ Take a five minute decompression stop at 10 feet just to be safe.
- ✓ Be cautious on repetitive dives.
- ✓ Figure your decompression limits to the next greater depth and next longer bottom time.
- ✓ Check yourself for bends symptoms after the dive. Don't be shy about telling your dive buddies you're feeling strange.
- ✓ If you suspect you have a bends hit, get to a recompression chamber—fast.

Perhaps the most effective weapon in the sport diver's war against bends is a thorough knowledge of the subject and a healthy respect for it. New books on decompression sickness abound. They are available from the certification agencies and various other sources. If you want to learn more about this physiological phenomenon, I suggest you pick up a copy of one of these. The best way to handle the bends, however, is to avoid them—by cautious diving. 

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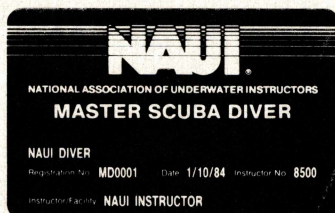
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ONE

IN A SERIES OF INTERVIEWS WITH
THE LEADERS IN DIVING EDUCATION

**"Continuing education
is the key which
opens the door to
marvelous experiences
underwater."**

Dennis Graver, noted diving educator, has been employed as a professional by both NAUI and PADI, and is a prolific author of books, manuals, articles and columns on diving. "Diving is a means to an end rather than an end in itself. It is a vehicle which allows you to do things in a wonderfully different world. You need to know more than just how to dive. You need advanced and specialty training... to master diving in order to experience all it has to offer. Now there are excellent courses available. Get all the training you can to get all you can from your training."



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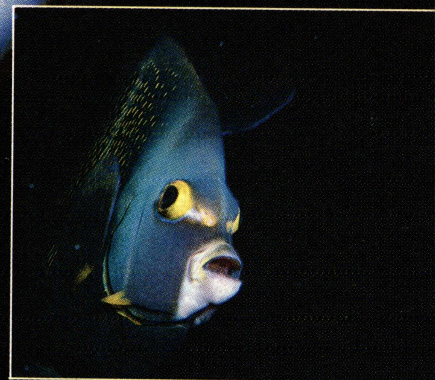
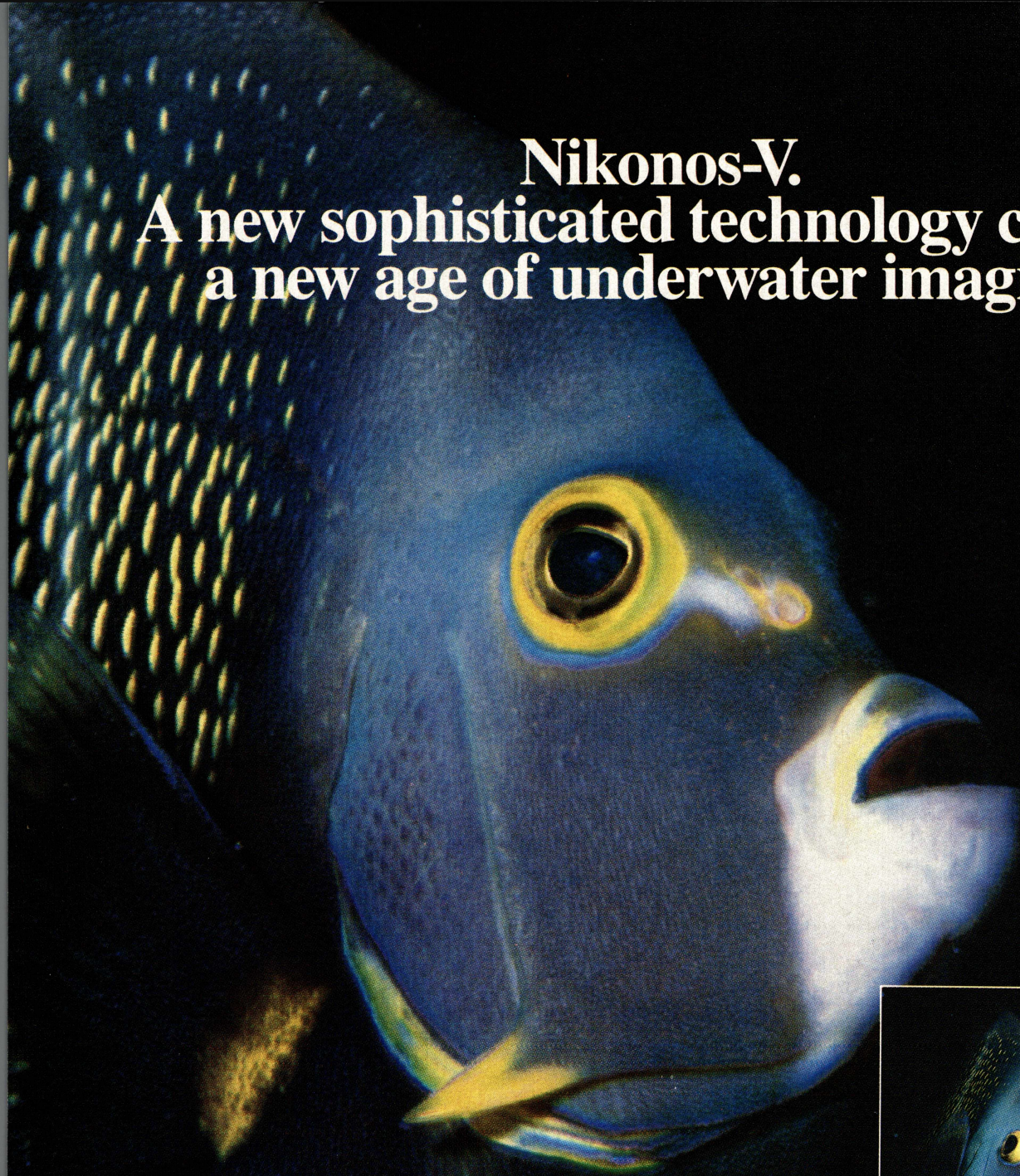
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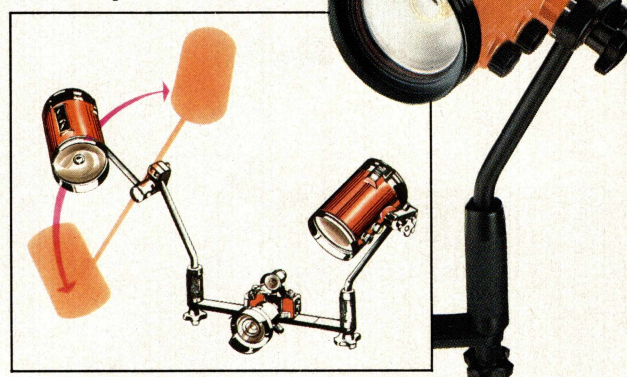
Automatic TTL Flash Metering.

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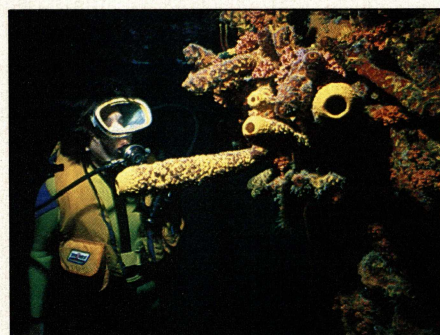
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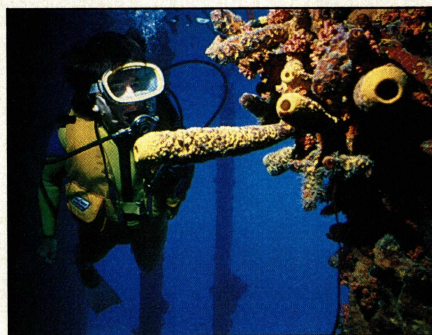
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Scuba Quiz

Category: Dive Travel

By Dennis Graver

Market studies show that divers spend more money on dive travel than they do on diving equipment. This is consistent with other studies indicating that people today regard experiences more highly than material goods. To have the best possible experience, divers need to be aware of certain aspects of travel. Answer the following true-false questions, then compare your responses to the answers on the following page.

1. If you are going to a tropical area to dive, an exposure suit is not necessary.

- ☐ A. True
☐ B. False

2. Scuba tanks must be emptied completely and the valve left open when taken on commercial flights

- ☐ A. True
☐ B. False

3. Depth gauges should not be taken on commercial flights

- ☐ A. True
☐ B. False

4. Divers are allowed higher than normal weight limits on baggage and at no additional cost

- ☐ A. True
☐ B. False

5. Divers must wait at least 24 hours if flying after diving

- ☐ A. True
☐ B. False

6. Standard electrical power (110 volt, 60 cycle) is always available at dive resorts

- ☐ A. True
☐ B. False

7. When traveling to warm, clear, calm waters to dive, a formal orientation is important even to highly experienced divers

- ☐ A. True
☐ B. False

8. It is a good idea to take all of your diving equipment when traveling, including tanks and weights

- ☐ A. True
☐ B. False

9. New, foreign made dive and camera equipment should be registered with U.S. Customs prior to departure from the United States

- ☐ A. True
☐ B. False

10. Sunburn is not likely in tropical areas as long as you are in or under the water

- ☐ A. True
☐ B. False

11. Fasting may be safer than some medicines for diarrhea

- ☐ A. True
☐ B. False

12. Return flight reservations can be lost if not confirmed at least 72 hours in advance for international flights

- ☐ A. True
☐ B. False

Scuba Quiz

Answers: Dive Travel

1. B. False. The water isn't always as warm as you think it will be. Storms, cold fronts, upwelling and other factors can lower water temperature until it is uncomfortable or unbearable without a suit. It is much better to have insulation and not need it than it is to need it and not have it. Remember, too, that a suit provides protection against scrapes and scratches as well as against heat loss.

2. B. False. There is a regulation for scuba tanks aboard commercial carriers. The pressure in a tank cannot exceed 40 psi. However, some handlers do drain the tank and leave the valve open. This isn't good because extreme temperature variations during a flight cause the tank to contract and expand and to "breathe in" moist air. Every dive resort has tanks available, so the bulk and weight of tanks really are not necessary.

3. B. False. Depth gauges are essential equipment. They must be protected from reduced pressure at altitude, however. This can be accomplished by putting them in a pressure-proof container or by carrying them inside the pressurized cabin of the aircraft.

4. B. False. It is quite unlikely that a diver can travel light. If held to standard weight limits, divers would probably seldom qualify. An allowance is made for the extra weight of diving equipment, but there is a nominal extra charge—usually \$10 per set. Don't offer to pay, but if you are being charged for excess baggage, tell the person at the counter that your excess is scuba equipment so the charge will be less than normal.

5. B. False. In most instances, recreational divers can fly 12 hours after diving. The latest recommendation for flying according to Bruce Bassett, Ph.D, president of HUB is, "If flying up to 8,000 feet after diving, delay flight according to bottom time in previous 12 hours: less than one hour under pressure, wait four hours; less than four hours under pressure or no decompression dives near the no decompression limits at depths of 60 feet or deeper, wait 12 hours; more than four hours under pressure, wait 48 hours." The old practice of waiting until you are a Group D diver is obsolete.

6. B. False. Standard U.S. electrical power may not always be available, and can ruin equipment unless used with converters. These adapters are readily available. Be sure to find out the power source at your destination so you can be prepared to correctly operate battery chargers, hair dryers, etc. Also, be aware that a standard outlet may be used for 220 volt power in some countries. Here we are required to use special outlets, but this is not the case elsewhere.

7. A. True. An orientation is essential for every new dive area. Knowledge about currents, hazardous life and areas, entry and exit locations and techniques and other precautions are necessary to preventing injuries and mishaps. It is wise to pay to obtain such information from a local diving professional who is well acquainted with the area.

8. B. False. It is a good idea to take all of your own gear—except for tanks

and weights. These are best left home. Both are usually available at resorts. An exception are systems requiring lead shot. In this instance, the weight needs to be taken or a weightbelt worn separately. Some divers take weightbelts which can be filled with dry sand for ballast. The sand (weight) can be left behind at the end of the trip.

9. A. True. When entering the U.S. you may have to pay duty on your foreign made camera and dive equipment unless you can prove you owned it prior to departing the States. Registering the gear with customs ahead of time is easy and it also provides a record of equipment for insurance purposes. Prepare a listing of the items, including all serial numbers. This speeds up the process with customs.

10. B. False. Ultraviolet rays can penetrate water to a depth of several feet and cause sunburn. The coolness of water fools many snorkelers, who become badly burned. Protection is important. Don't let overexposure from a tropical sun ruin your vacation. Remember that the sun's rays are more direct and intense in tropical locations.

11. A. True. The American reaction to bowel problems is to take a pill. This can sometimes be dangerous and has led to serious difficulties such as a perforated intestine. Medical attention is advised. The use of Pepto-Bismol as a preventive measure seems to help those susceptible to bowel trouble. Fasting, followed by a high protein, low fat diet, may be a good remedy that is safer than pills.

12. A. True. Ticket leaflets for international flights specify you must confirm your return flight at least 72 hours in advance. It is a good idea to confirm your departure at the time of arrival and to then *reconfirm* your flight three days before time to depart. It is no fun to be stranded in an airport in a foreign country.

It is important to find out as much as you can in advance regarding your diving destination. SKIN DIVER is an excellent source and the resorts themselves will provide valuable information upon request. I hope the information in this quiz will also help you be better prepared so you will have maximum enjoyment and minimal difficulties. Chances are that if you answered seven or more of the questions correctly you have dive travel experience. If you missed three or more questions, do some research before your next trip. >»»

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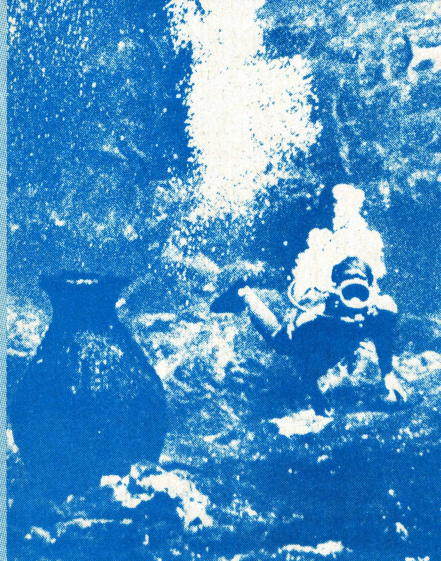
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Wreck Facts



BY ELLSWORTH BOYD

The mystery wreck of Bonaire is no longer a mystery, thanks to Jean Haviland, whose diligent detective work uncovered the ship in Lloyd's Wreck Returns. The wreck is the windjammer, *Mairi Bhan*, a three masted bark that went down in December 1912 while sailing from Trinidad to Marseilles with a load of asphalt, or pitch as they called it then.

Built in Glasgow, Scotland in 1874, the 1,378 ton vessel was constructed for an Englishman named M'Intyre and registered in London. But soon she was sold to Italians Fratelli Denegri and G.B. Mortola who owned her at the time of loss. Captain Razeto was her master from 1907 until her demise in 1912. The 239 foot long, 37 foot wide windjammer rests on her side in the sand, 180 feet deep, close to the reef off the northwest coast of Bonaire. She is only 200 yards offshore the BOPEC oil terminal.

Linda Bedell, president, Thunder Bay Diving Club, Alpena, MI, sent me a very informative brochure entitled, Dive the Shipwrecks of Thunder Bay. Included in the publication are more than a dozen popular wrecks and a map pinpointing each of them. To show you what a small world it is, Linda, the very next day, strictly by coincidence, I received a letter from Jim Ray, Hampton Bays, NY. He asked about six wrecks in the Alpena area and all are listed in the publication! The brochure, funded by the Alpena Chamber of Commerce and the Michigan Skin Diving Council, is available free by writing: Chamber of Commerce, P.O. Box 815, Alpena, MI 49707.

Richard Zielinski, Otego, NY, head of the New York State Divers Association,

writes that divers are having fun on wrecks in the St. Lawrence, Clayton and Alexandria Bay areas. The *Keystrom*, a coal carrier that sank in 1912, is one of the most popular sites. The 260 foot vessel sailed the Atlantic, entered the St. Lawrence River and passed Alexandria Bay on her way to Montreal. She ran aground in the fog on Outer Scow Shoal and while her crew scrambled to safety, the *Keystrom* slid beneath the waves. Divers explore her in 125 feet at the stern and 40 feet at the bow. Salvage attempts were abandoned in 1914 and not until 1958 did two Syracuse divers—Robert Evans and Bernard Forth—relocate the massive hulk. They retrieved the 600 pound anchor, ship's wheel, telegraph bell and several lamps.

Gary Gentile, 7408 Shisler St., Philadelphia, PA 19111, has a series of drawings of East Coast shipwrecks as they actually appear on the bottom. Gary personally surveys each wreck, using the ship's plans and photographs to establish its basic structure. Then he does a series of underwater drawings on slates showing how the wreck sits, what is exposed, entry points and fine details. The end result is a drawing good enough to be used as a guide to the wreck or suitable for framing. Gary has drawn the *San Diego*, *Pinta*, *Great Isaac*, *Moonstone*, *Stolt Dagali*, *Texas Tower* and others.

In response to my question to charter boat captains about where they will take divers, Howard Klein, captain of the *Gray Eagle*, writes: "I have a 36 foot custom dive boat built to my specifications in 1983. Berthed in Freeport, NY on Long Island's South Shore, she is certified to carry 16 passengers, but I usually take 6-10 divers, depending on the wreck. My three crewmen and I are all divers. So far we have been to: *Acara*, *Edwin Duke*, *Lizzie D*, *Iberia*, *Pipe Barge*, *Fran S*, *USS San Diego*, *Stolt Dagali*, *Pinta*, *G and D*, *Fire Island Light* and *Black Warrior*." Captain Klein can be reached at: 149 Springtime Lane, Levittown, NY 11756.

Two divers have become experts on the *U-85*: William Hughes, 357 E. Prospect Ave., State College, PA 16801, and Jim Bunch, P.O. Box 48, Kitty Hawk, NC 27949. Hughes has researched and written an exciting article about the submarine while Bunch has amassed a fine collection of photos of it. The *U-85* was the first German submarine sunk during World War II and lies in 100 feet approximately 20 miles east of Oregon Inlet, NC.

In his letter telling about the *U-85*, Hughes asked about the *U-548*. My submarine expert in Ft. Lauderdale, David Simpson, writes: "The *U-548*, captained by a German named Krempf, was sunk April 30, 1945 by U.S. Navy vessels *Natchez*, *Coffman*, *Bostwick* and *Thomas*. There were no survivors and her final resting place is 36-34N, 74-00W. I am not sure of the depth, but I am guessing that it is very deep because nobody has dis-

covered her yet."

Submarine buffs might be interested in a new book published by the Naval Institute Press: *The U-boat, Evolution and Technical History of German Submarines*, by Eberhard Rossler. Nearly 400 pages, the book describes the planning, design and construction of Germany's submarines from the early experimental types of the 19th century through two world wars. It includes the latest submarines coming into service under the German Federal Navy today. Over 400 illustrations, including 180 photos of U-boats, provide the most comprehensive and authoritative account of German submarine development yet attempted. For a brochure and pricing write to Debbie Boss, Naval Institute Press, U.S. Naval Institute, Annapolis, MD 21402.

Val Martin, Florida Classics Library, writes: "You seem to have a lot of divers who are Civil War and blockade runner enthusiasts. They might be interested in a paperback: *John Taylor Wood, Sea Ghost of the Confederacy*. One of the South's most colorful fighters—the grandson of Zachary Taylor and the nephew of Jefferson Davis—Wood captured over 30 Union merchant vessels in three weeks. His adventures with the blockade runners are exciting and significant." The book costs \$10 including postage, from: Val Martin, Florida Classics Library, P.O. Box 1657, Port Salerno, FL 33492-1657.

Dick Geyer has written: *Wreck Diving, A Guide for Sportdivers*, a paperback whose eight chapters include equipment, techniques, expectations, hazards, conservation and preservation. A professional salvage diver, Geyer's main objective is to teach sport divers how to plan and execute successful wreck dives. His book is \$7, including postage, from: New Century Publications, Corporate Park, P.O. Box 1854, North Brunswick, New Jersey 08902.

Jim Jenney writes that he has a limited supply of his book, *Diver's Directory of Shipwreck Research*, for sale at \$7, including postage. This is the book I have recommended to many readers in the past because it tells how to begin and carry through extensive research on wrecks. Jenney lists many places to write or visit in order to obtain information or photos of ships from their launching to their expiration. Write to: Jim Jenney, P.O. Box 144, Saunderstown, RI 02874.

Phil Hyde writes that he has been involved in nautical archaeology for over 10 years and has amassed a number of out-of-print books on shipwrecks, treasure and pirates that divers may be interested in. Write to him for your needs and ask about his catalogue: Phil Hyde, Nautical Archaeology, 650 Stratford Ave., Stratford, CT 06497.

Send your questions to: Ellsworth Boyd, Rt. 2, Box 408, 1120 Bernoudy Rd., White Hall, MD 21161. Include a stamped, self-addressed envelope. ✉

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HALLOWEEN UNDERWATER

Put A Little Levity Into Your U/W Slide Show

TEXT AND PHOTOGRAPHY BY GERI MURPHY

It is often said that divers take their sport too seriously. The life support aspects and physical requirements tend to make us preoccupied with safety rather than enjoyment.

Underwater photography is no exception. The difficult challenge of taking pictures in an alien environment, coupled with the intensity required, make most underwater slide shows informative but dull.

Injecting a little humor into a slide show can make a world of difference. Whether it be slides from the most recent dive trip or a highly technical marine biology lecture, comic relief can be a welcome break in an ordinarily serious presentation.

The photos on these pages are simple examples of how divers can have fun with their U/W cameras and the cooperation of willing friends. These were taken during an underwater photography course in the Bahamas and made in celebration of one of our most enjoyable costume holidays—Halloween! 🦋

The creature knows the standard scuba safety signals—here it demonstrates the OK sign.



Opposite: The Creature from the Black Lagoon mask makes an ideal photo prop. Above: Creature observers need U/W sunglasses.

The formal attire for topside creature observers is a gigantic bow tie, hat, clown nose and, of course, the mandatory sunglasses.





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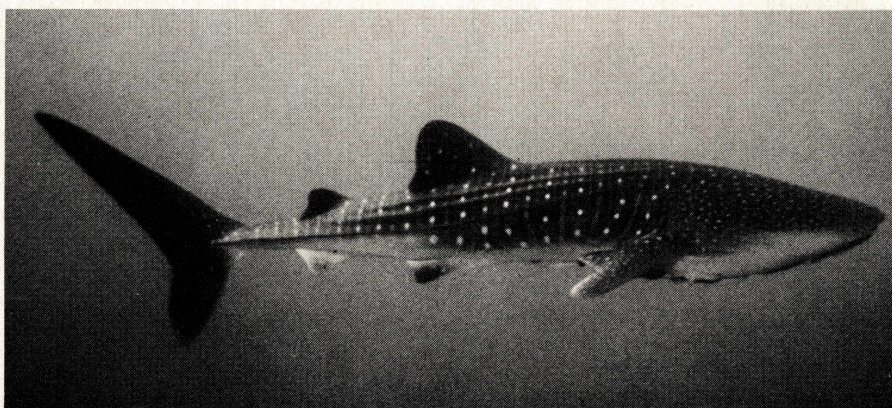
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Film Festivals 'n Symposiums

CALTECH/CLARK FILMS

Dr. Eugenie Clark presents an evening of shark encounters in film and photography for the Third Annual Presentation of Underwater Wonders at Caltech. In cooperation with Caltech Public Events, Caltech's scuba diving club, the Kelpers, will bring this presentation to Beckman Auditorium, South Michigan Avenue at Constance Street, Pasadena, Saturday, November 3 at 8:00 pm.



photo/Michael D. Curtis

Clark begins this encounter with the film *The Red Sea: The Underwater Park at Ras-Mohammed*, in which she explores the fragile coral reefs of the Sinai Peninsula. Other films to be screened include *Sea Monsters* and *Cigar Sharks, Uses and Misuses of Sharks* and *Whale Shark Encounter*. Spectacular slides from Clark's collection will be shown in addition to those of David Doubilet.

Tickets to this presentation are available at the Caltech Ticket Office, 332 S. Michigan Ave., Pasadena. For ticket information and other details, call (818) 356-4652.

BALTIMORE FILM FESTIVAL

Baltimore's Underwater Film Festival '84 will feature Arctic explorer, Joe MacInnis, M.D., as master of ceremonies on November 17. Filmmaker Nick Caloyianis will present his latest work and a film by Jack McKenney will also be featured, among others.

Daytime seminars will include topics on wreck diving and U/W photography.

Admission to the evening of films is \$7; a meet the speakers, wine and cheese party following is \$2.50. Admission to the day program is \$3.50.

For information contact BUFF, c/o 442 Chalfonte Drive, Baltimore, MD 21228; (301) 747-3004.

SAUDI ARABIA FILM FESTIVAL

Stan Waterman will present several of his films at a three day underwater film festival in Jeddah, Saudi Arabia, October 16-18. To be held at the Jeddah Marriott, the festival is sponsored by Al-Nawa Dive Club and Dick Massy Productions. The films to be shown include *The Day of the Whale*, *Off the Wall*, *Roughing It in the Coral Sea*, *A 60th at f8* and Waterman's latest, *Leviathan*.

The winners of Saudi Arabia's first National Underwater Photography Competition will be announced at the festival. Prizes include vacation trips to Bali and Australia's Great Barrier Reef.

For ticket information contact: Dick Massy, c/o Lansa, P.O. Box 430, Jeddah, Saudi Arabia.

FT. LAUDERDALE U/W FESTIVAL

South Florida Divers, Inc., a Hollywood, Florida scuba club, will host its Fourth Annual Underwater Festival on Sunday, November 4, to benefit DAN (Divers Alert Network). The fund raising event will be held at the Sheraton Yankee Clipper Hotel Pool in Ft. Lauderdale. Events will include underwater monopoly, backgammon, checkers and arm wrestling as well as darts and a scuba experience for poolside spectators. Area businesses and the general public are invited to sponsor each hour of dive time for the planned games.

South Florida Divers, Inc. is a non-profit organization designed to promote quality diving in the south Florida and Caribbean area. For information call (305) 895-8646.

ARKANSAS HYPERBARIC UNIT

A hyperbaric unit has been installed at St. Vincent Infirmary in Little Rock, Arkansas. The unit is manned 24 hours a day by physicians and support personnel trained specifically in its use in diving related emergencies such as decompression sickness and air embolism, as well as other medical applications. The unit is registered with DAN and the emergency phone number is (501) 660-2677.

Diver's Calendar

October 6-7 Sonoma County Diver Rescue Workshop, Santa Rosa and Fort Ross, California. Lectures, discussion, pool and ocean exercises. (Contact: (participants) Dave Sheldon, P.O. Box 1517, Fremont, CA 94538; (staff) Bruce Brown, P.O. Box 947, Diamond Springs, CA 95619)

October 19-20 Underwater Film Symposium, S. Beloit, IL. (Contact: Bill Steinborn, (815) 332-4225)

October 20 Long Island Divers Association Second Annual Fall Festival at West Hollow Jr. High, Old East Neck Road, Dix Hills, Long Island, NY. (Contact: LIDA, P.O. Box 7304, Hickville, NY 11801)

October 27-28 Midwest Dive Council Fall Business Meeting and Awards Banquet, Holiday Inn, Alton, IL. (Contact: Banquet Chairman, Arnold R. Sanders, Bubblemasters Dive Club, 345 Hand Drive, Godfrey, IL 62035; (618) 466-6863)

Through October 31 PADI's Sixth Annual Underwater Photo Search/Competition. (Contact: your local participating PADI Training Facility)

November 1 Stan Waterman film show at the John G. Shedd Aquarium in Chicago, IL. (Contact: (312) 939-2426 ex. 362)

November 3 The Caltech scuba club, the Kelpers, presents Dr. Eugenie Clark and her films on sharks at Beckman Auditorium, South Michigan Ave., Pasadena, CA. (Contact: (818) 356-4652 for information)

November 4 Fourth Annual Underwater Festival to benefit DAN at the Sheraton Yankee Clipper Hotel pool in Ft. Lauderdale, Florida. Underwater Games. (Contact: Joe Smaringa, President, South Florida Divers, Inc. (305) 865-7339)

November 10 Dive New Jersey, the eighth annual symposium sponsored by the New Jersey Council of Dive Clubs at Lucy Stone Hall, Rutgers campus, Piscataway, NJ. (Contact: Dick Norton, 401 Merrywood Drive, Edison, NJ 08817)

November 17 Baltimore Underwater Film Festival '84 featuring Joe MacInnis, M.D. as master of ceremonies. (Contact: BUFF, c/o 442 Chalfonte Dr., Baltimore, MD 21228; (301) 747-3004)

BERRY SCUBA EXPANDS

In order to serve its growing worldwide customer demand, Berry Scuba has increased its direct mail department by more than 20 percent. With this additional space and personnel, it will be able to maintain a shipping time of 48 hours.

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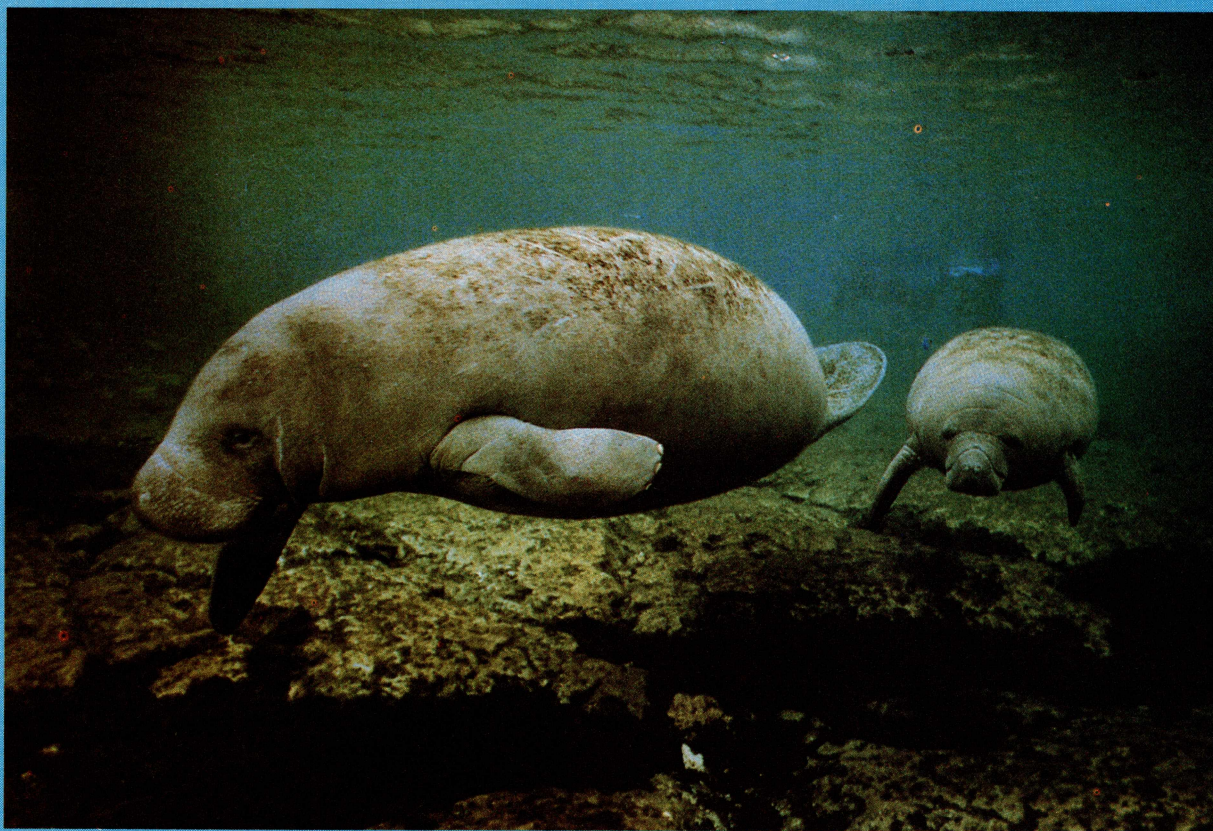
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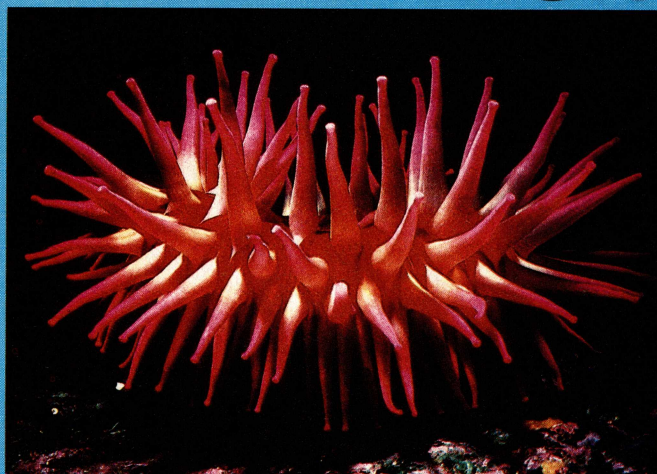


"Wait for Me," Marc Siem, Grand Prize winner and First Place Vertebrate Prints winner.

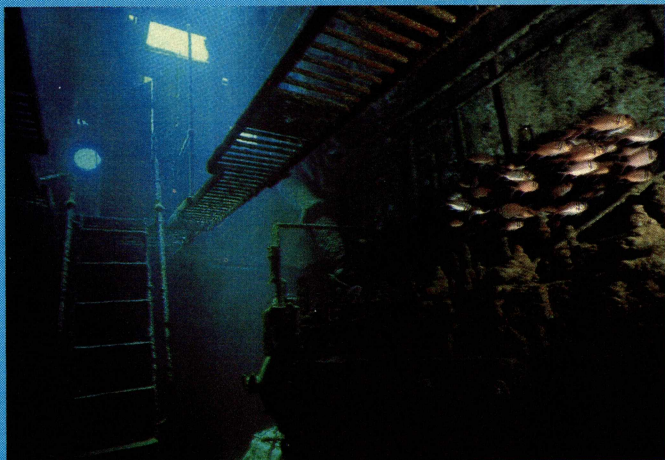
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"Cozy," Dennis Daughters, First Place Vertebrate Slides.



"Fiery Anemone," Stuart Westmorland, First Place Invert. Slides.



"Cartanser Soldiers," Michael Goodwin, First Place Wreck Slids.



"Eye to Eye," Allen Campbell, First Place Diver/Environ. Prints.



"Night Diving," Sandy Hootman, First Place Mini-Format Prints.



"Cannons of Peace," Al Huelga, First Place U/W Scene Prints.

BY PAULA M. NOVOTNY

At Our World-Underwater, held in Chicago last May, the winners of the 1984 Underwater Society of America International Photography Competition were announced. We present them to you on these pages.

This yearly competition is designed to provide nonprofessional underwater photographers worldwide with the opportunity to have their work published and to win thousands of dollars in prizes. Again this year there were numerous superb entries by fine amateurs from 30 counties. A special "thank you" goes to our permanent judges, Paul J. Tzimoulis, Gale Livers and Rick Frehsee. Many thanks also to all the manufacturers and organizations that donated close to \$10,000 in prizes. These were distributed, along with plaques, to the first, second and third place winners in each category.

The 1985 competition entry

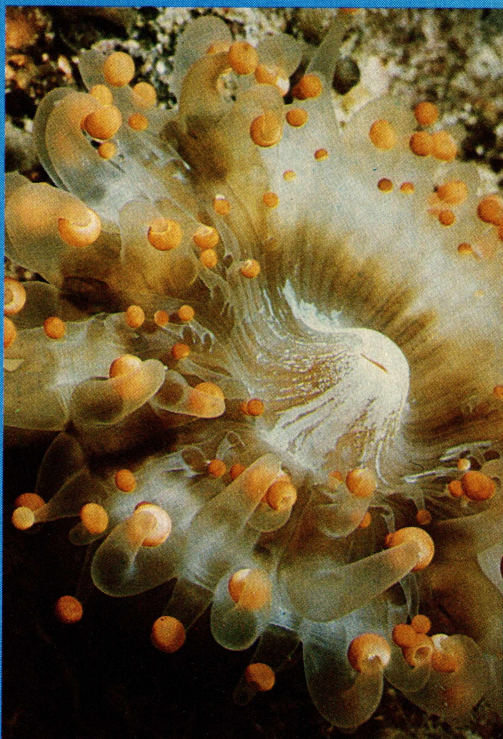


G. Van Ryckevorsel, 1st Pl. U/W Scene Slids.



David Haas, First Pl. Diver/Environ. Slides.

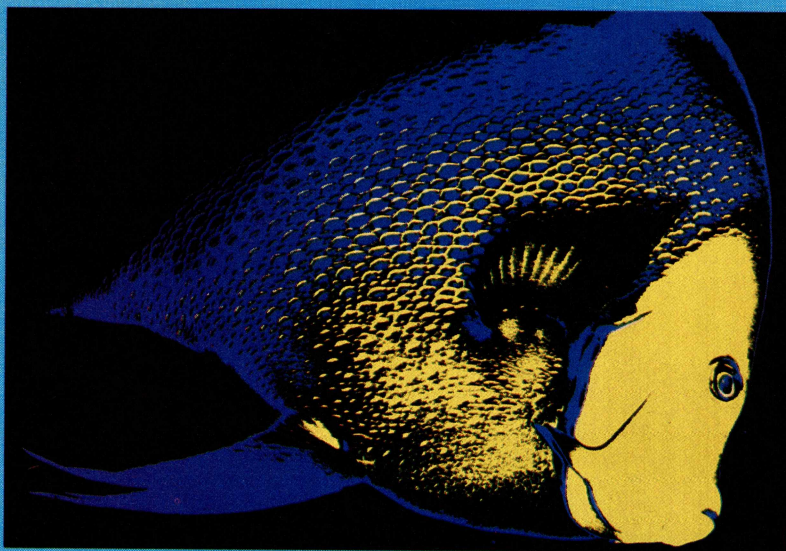
USA



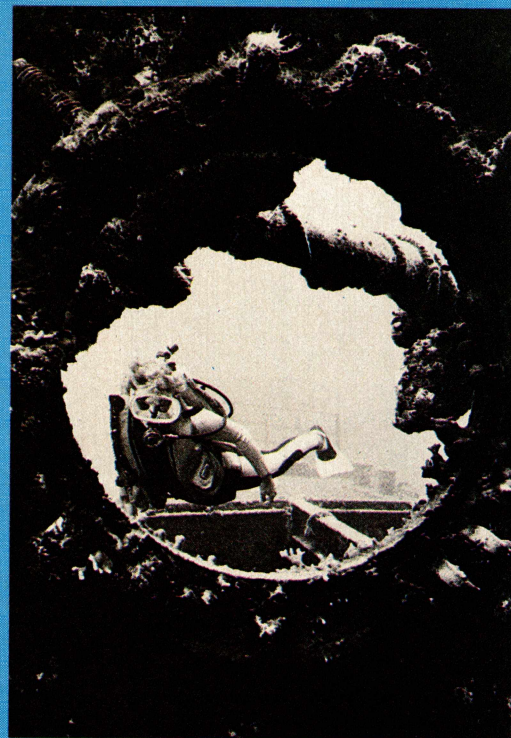
Jeff McAdams, First Place Invertebrate Prints.



Allen Campbell, First Place Wreck Prints.



"Profile," Steve Rosenberg, First Place Special Effect Prints.



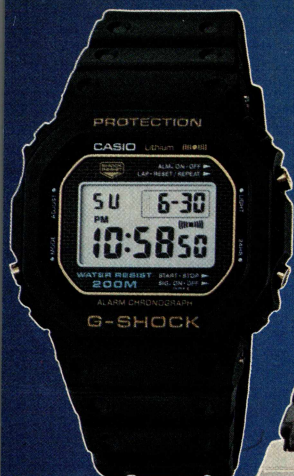
Jeff McAdams, First Place Black/White Prints.

form is available at this time; entries must be received by midnight March 1, 1985. Prizes will include: a week long scuba vacation at the Holiday Inn in Grand Cayman with Bob Soto's Diving Ltd., courtesy Ron Kipp; a Kodak carousel slide pro-

jector; a Nikonos V with lens from Nikon; and thousands of dollars in other prizes. The five categories for slides and prints are: vertebrates, invertebrates, diver environment, wrecks and underwater scenes. Special categories include: mini-

format prints, black/white prints, special effect prints, movies and video. Contact: USA 1985 International Photography Competition, 9702 E. 12th St., Indianapolis, IN 46229. Include a self-addressed, stamped, long envelope. >

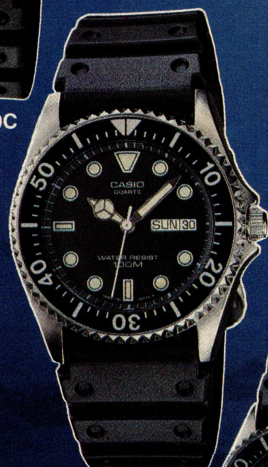
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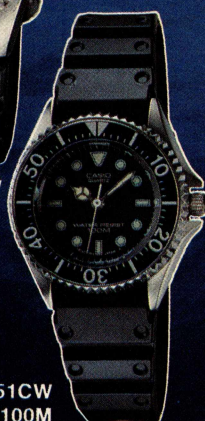
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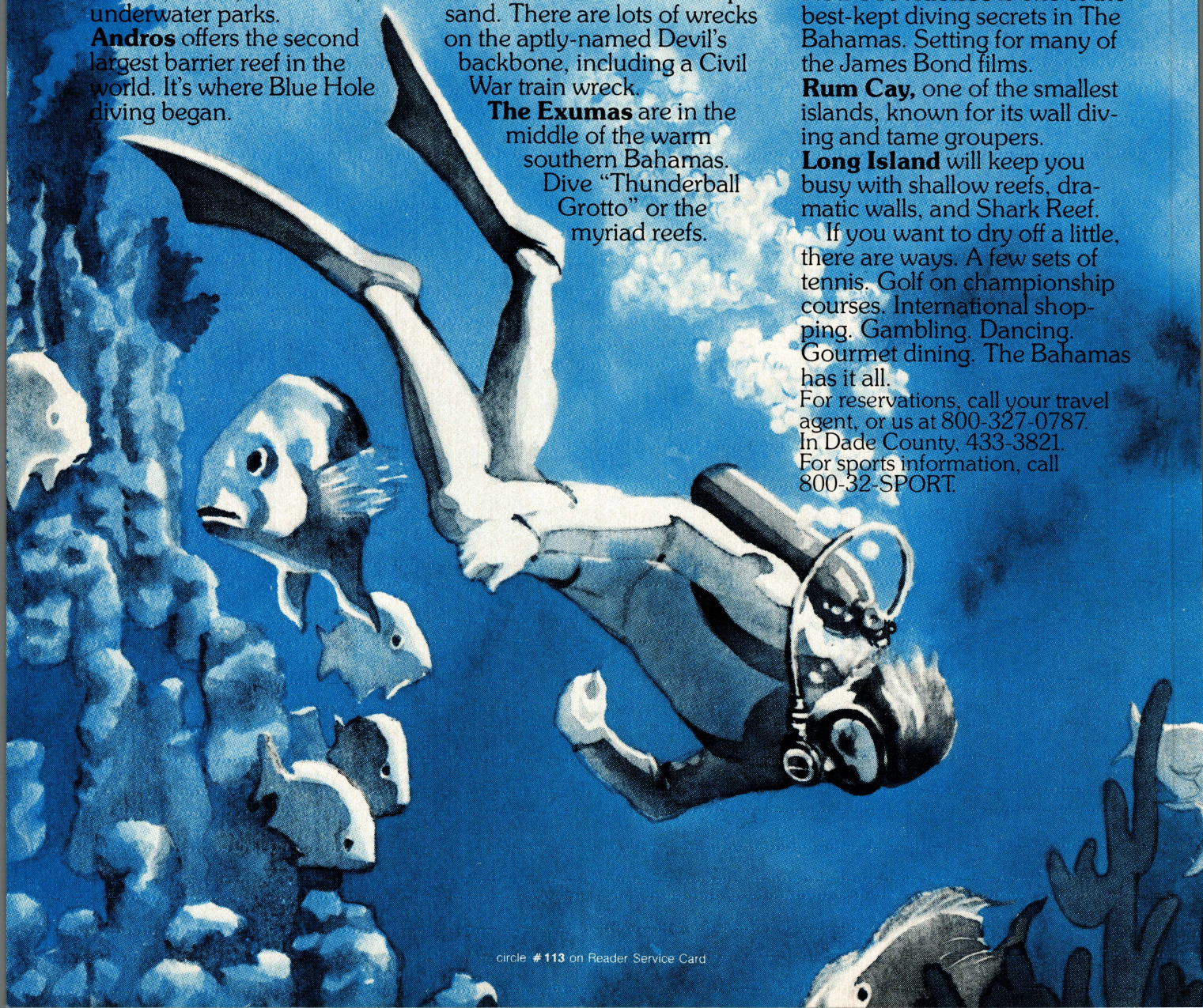
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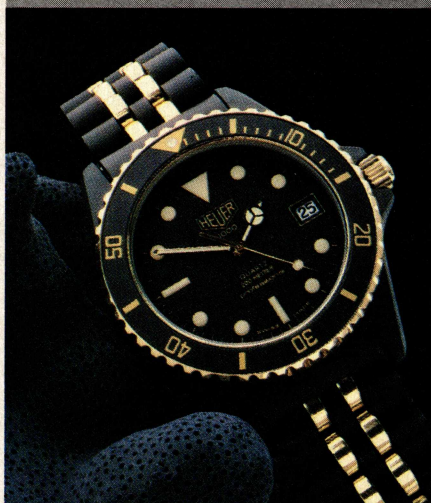
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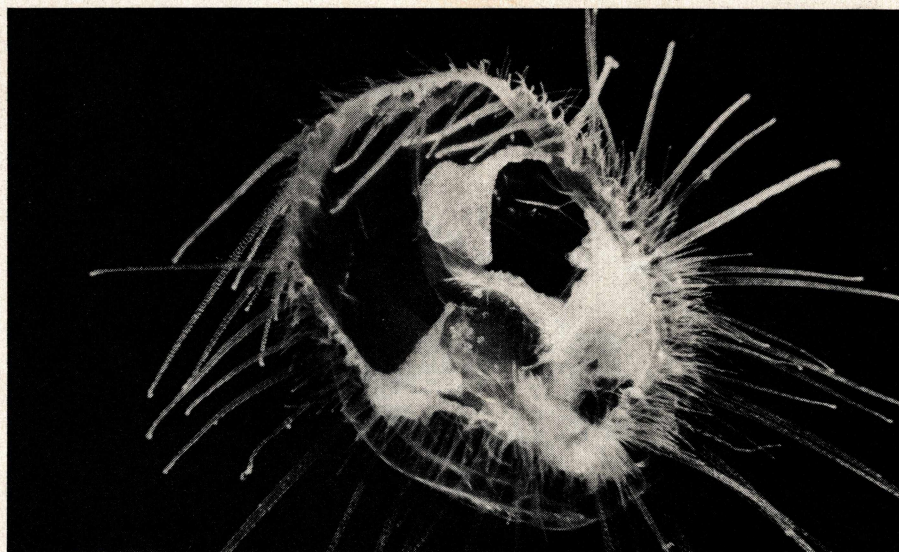
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photo/Jac Vinson

Freshwater Jellyfish

BY STEVE KENNEDY

Midsummer is a good time to go diving in Central Texas. It's too hot to do anything else. On one particular July weekend, I eagerly agreed to go diving with an instructor friend of mine, Jac Vinson. He had recently gotten permission to dive in a private stone quarry. The quarry had been flooded for about 15 years and we were both anxious to check out this new dive spot. As we drove up to the edge of the quarry our eagerness began to build. The view from the 30 foot high rim revealed a 15 acre lake.

After parking the van, Jac and I managed to don our gear in what seemed record time. We both waded into waist-deep water and bent over to put on our fins. Suddenly Jac asked, "What's that?"

I looked, and indeed there was something there. Several small gossamer forms, about the size of large marbles, floated in the water just below the surface. I hadn't seen them before because my eyes were focused on the ground.

Once submerged, we were able to give these translucent forms a closer inspection. The hemispherical body, fringed by short tentacles, identified the animals as jellyfish. The fact that Jac and I had recently returned from a dive trip to the Caribbean made the appearance of these small jellyfish seem natural, if not normal. But, we were diving in fresh water!

After some investigation, we determined that these were indeed freshwater jellyfish. More specifically we had found *Craspedacusta sowerbyi* in our quarry. This is the only freshwater jellyfish found in North America. It is found throughout the eastern and south-central United States. Yet despite its widespread range, the creature is difficult to find. It is most frequently found in smaller bodies of wa-

ter (ponds, small lakes and water-filled quarries) between the months of June and October. But even then, this little critter can be elusive. The jellyfish may be found in a given lake or quarry one year and be completely absent the next. It might appear for several successive years only to disappear for an equal number of years. In the quarry, the jellyfish has been present in large numbers throughout the year. We can only hope this will continue.

Freshwater jellyfish occur in two different forms; the easily recognized medusa and a much smaller, almost plant-like hydroid stage. The hydroid reproduces by splitting into new colonies or by producing small buds which break off to form new medusae, or jellyfish. The hydroid colony is normally found on the bottom of the lake and has a cylindrical body about three-eighths inch long. This hydroid slowly creeps along the bottom, feeding through a mouth found on one end of its body. When a new jellyfish bud breaks off from its hydroid colony, it measures a mere 0.4 mm in diameter, much too small to spot with the naked eye. As it matures, it grows to a diameter of one inch.

The mature jellyfish moves and feeds in much the same way as its marine relatives, picking up plankton and particulate debris from the water as it swims. We found jellyfish at all depths to the bottom at 30 feet, but they seemed to be more common from the surface to 20 feet.

We are looking forward to seeing these small, graceful creatures in the coming years. I now find it impossible to swim past one without gently reaching out to touch it or spin it slowly around, then to draw my hand back and let it swim away. 

PADI COLLEGE MOVES

Open house festivities for PADI International College were held at its new facilities in Santa Ana, California recently. The well attended event allowed personnel from throughout the dive industry to see the new 6,000 plus square foot, ultra-modern learning center, designed specifically for the college when the operation was moved from its San Diego campus earlier this year.

The college was acquired from previous owners by the PADI organization,



From left: Robbie Meistrell, Melanie Vincz, Carl Long, PADI guide, Larry Hagebush.

and several of the PADI headquarters staff serve on the college staff as part of their headquarters duties. Jim Williams continues to be dean of the college. 



photos/Dan Walsh

From left: Jim Williams, dean of PADI College, Gloria Stewart and Dana Stewart.

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NEW ENGLAND SHORE DIVING



photos/Andrew Martinez

Some of the best shore diving in the Northeast, including rocky reefs encrusted with marine life, is found off Cape Ann, Massachusetts. The area offers a variety of fish species, and an abundance of colorful invertebrates perfect for macro photography. The seashore also offers quaint New England charm. Top: Safe anchorage at Gloucester. Above: Herring gull on fishnets.

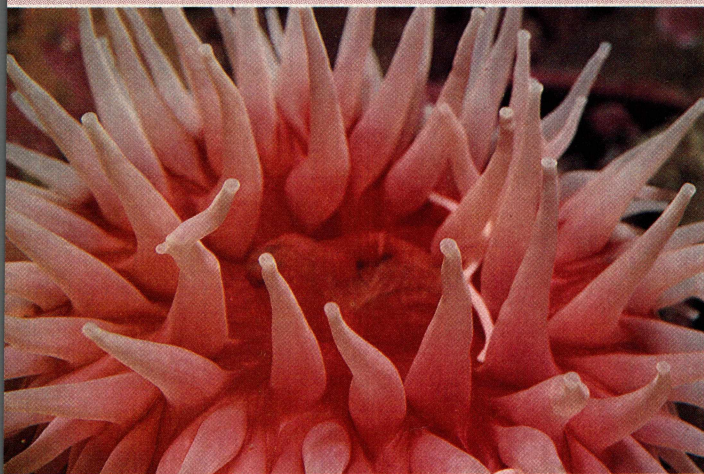
Cape Ann's Rocky Coast Offers A Kaleidoscope of Marine Life

BY DAVID F. DONAVEL

Separated from the mainland by the narrow, winding Annisquam River, Cape Ann, Massachusetts juts into the Gulf of Maine like a stumpy granite fist. Essentially a massive rock pile bathed in cold, nutrient rich saltwater, it offers some of the best shore diving in the Northeast. Within a stone's throw of the beach lie reefs, walls and rocks encrusted so thickly with marine life that, in the opinion of some, they rival the Caribbean.

Cape Ann is small and a car trip around it, depending on traffic and route, takes something less than an hour. Yet within only a few miles lie a number of excellent dives, all accessible from the beach. Premier among these is Folly Cove.

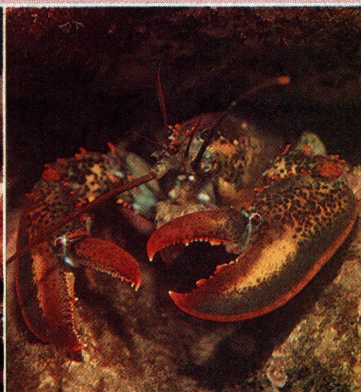
Because Folly Cove's beach is a tumble of rock, walking into the water is easiest at high and low tide although the best diving usually occurs on the last two hours of the flood. Mid-tide footing is tricky, but once in, your efforts are well rewarded. Above the water and along the left hand or north side of the cove, about halfway to the point, there is a pronounced depression in the granite slope, as if someone had long ago cut a massive slab out of the wall. From that depression out toward the point the granite drops into the water at least at a 45 degree angle. Along this sheer stone bloom gardens of pink and white sea anemones (*Metridium senile*), so intense as to appear unearthly. Out farther the nearly vertical wall is covered with coralline algae, encrusting sponges, golden star tunicates and occasionally, a bright anemone. Here you can find sea peaches, large swatches of soft coral, colonies of pink-hearted hydroids and, rarely, a *Tealia* anemone, its ringed tentacles feeding in the tidal drift. Sea stars creep over thick beds of mussels and gliding through it all, but especially among the colonies of hydroids, are graceful and stunningly colorful red-gilled and salmon-gilled nudibranchs.



A colorful *Tealia* anemone.



A large hermit crab clutches a smaller one.



A diver with *Metridium* anemones (left) and lobster (right).



A brightly colored sea raven.

It's no wonder divers, particularly those who practice macro photography, return to Folly Cove. It is a macro photography heaven. The variety and density of life here provide almost endless material for study. The newcomer, however, should be aware that dashing out along the wall will prove unsatisfying while a slow and attentive approach will yield riches: The slower you move in Folly Cove, the more you see.

On any given Folly Cove tide, depending on the time of year, you might find bluefish, tautog, cunners, sea ravens, ocean pout, sculpins, lumpfish, flounders, skate, torpedo rays and huge schools of pollack. Planktonic creatures such as jellyfish and sea butterflies drift in and out with the tides and one might even encounter, in the summer, small squid and their finger-like egg cases anchored to the substrate.

Three-quarters of the way out, the center of the cove is littered with thousands of sanddollars, food for the grazing moon snails. Hermit crabs, spider crabs and sponge-covered toad crabs scuttle among the rocks, sometimes migrating over the sand to the more sloping southerly side where relatively large numbers of scarlet *Psolus* creep along the tumbled rocks. Here, too, are northern lampshells, beds of horse mussels, sea peaches and impressively large sea stars.

Folly Cove boasts its share of lobsters as well, but finding them during the day is difficult, especially for those unused to tracking them down. At night, however, they parade all over the ledges and floor of the cove. Be advised that harvesting lobsters is tightly regulated and a volatile issue all over New England. Licensed Massachusetts residents may take lobsters from state waters. Applications can be obtained from the Division of Marine Fisheries, 100 Cambridge St., Boston, MA 02212; (617) 727-3193. Non-residents can obtain licenses if they can first prove ownership of at least \$5,000 worth of property in the state—otherwise, no license. It is probably best to buy your lobsters from the guys on the boats who make their living selling them.

There are only two problems with diving Folly Cove: wind and parking. When the wind howls out of the northeast, visibility in the cove drops dramatically. Parking is easier to solve. There's no parking on the street and rules are strictly enforced. However, for early risers there's a small area off the road directly in front of the cove. If that's full, leave your gear on the beach with your dive partner, drive a half mile to the Halibut Point Reservation parking lot, pay the small fee and walk back.

From Folly Cove, Phillips St., one and one-half miles south, is a left run off Rt. 127. Follow it out to the beach and you'll be at Cathedral Rocks, a dive different from Folly Cove and nearly as exciting. The beach here is broken, gently sloping, monstrous flats of granite and, consequently, entry is easiest at high tide when you can slide into swimmable water. The algae on these rocks can be slick as ice and care should be taken to avoid a fall: granite is hard. While entry is possible from anywhere along the beach, most local divers either use the ravine-like cuts in the rock found directly below the shoreline's single tree, or ease in off the smooth rocks about 100 yards to the left.

Down below, a sandy bottom is broken by scattered boulders, some the size of small rooms, many covered with long eerie growths of swaying *Laminaria* (kelp). Others are clean and rest in the water like great bald heads. Swimming between or gliding over them creates a sense of exultation, as if you were some great bird for whom flight was an effortless pleasure. Attached to these massive boulders, particularly in deeper water, are red and white *Tealia* anemones and between the rocks or sometimes on them in plain sight, sculpins or sea ravens wait for meals. Flounders burrow in the sandy bottom; wolf eels hide out in crevices and occasionally the area is visited by dazzling silver-green schools of feeding pollack. For variation, some divers swim out 50 yards or so and then head down. This gives them quicker access to deeper and clearer water, but

(Continued on Page 37)



FUJICHROME



Fuji 50 produces bright colors and rich blue backgrounds. Top photo: Wide-angle shot of Cathy Church on Rhone. Above: Gray angel taken with Close-Up Kit.



RF50

Left: A red hind photographed with a Close-Up Kit. Far left, lower: Cup corals, extension tube. Lower left: Banded coral shrimp, Canon F-1, 55 mm macro lens.

Sharp, colorful, fine-grain images with rich blue backgrounds

the exposure ranges of the scenes (the metered f stops from the lightest to the darkest areas) exceeded the film latitude by several stops. Jim deliberately exposed several slides for the middle of the exposure range (rather than from the middle to the top) to see how Fuji 50 would handle mild overexposure in the upper midwater background. While overly light areas could be seen, Fuji 50 did quite well. We recommend Fuji 50 for wide-angle photography with such lenses as the Nikons 15 mm and high-quality lenses for housed cameras, providing there is enough light for exposures at apertures that yield acceptable depth of field. Cathy used a Nikonos SB-102 in the TTL (through the lens) automatic exposure mode, she went after fish, mostly French and Spanish grunts. The colors—especially yellows—were bright. And, when we examined the slides critically, we could see the fine details of fins and scales quite sharply.

CLOSE-UPS

For the supplementary close-up test, Jim used a Nikonos with 28 mm lens and the Nikonos Close-Up Kit. He shot an entire test roll on a large, cooperative gray angel that swam through the frame time after time. Again, Fuji 50 produced excellent images. He then used a second test roll to photograph a school of red squirrelfish and ended up with brilliant reds. For his third test roll, he photographed a variety of subjects including clumps of yellow cup corals at night, red and green sponges and banded coral shrimps. All of his test slides were bright and colorful.

Photographer Stewart Bakst shot two test rolls with his housed Canon F-1 and 50 mm macro lens. And, again, Fuji 50 produced bright, sharp images. His photos of a banded coral shrimp on a sponge decorated with tiny yellow cup corals were excellent. Even the finest details were rendered sharply and the reds and yellows were bright and rich. Photographer Brian Ansel, using a housed Pentax and close-focusing lens, photographed several scarlet limas which were recorded with brilliant reds on Fuji 50.

EXTENSION TUBES

Using a Nikonos and 1:2 extension tube and a small Ikelite MS Strobe, Cathy went after the yellow cup corals during a night dive. Although her concentration wandered and she took some shots of a small eel and a few other critters, she got the shot Jim wanted: a solitary yellow cup coral against a dark back-

(Continued on Page 42)

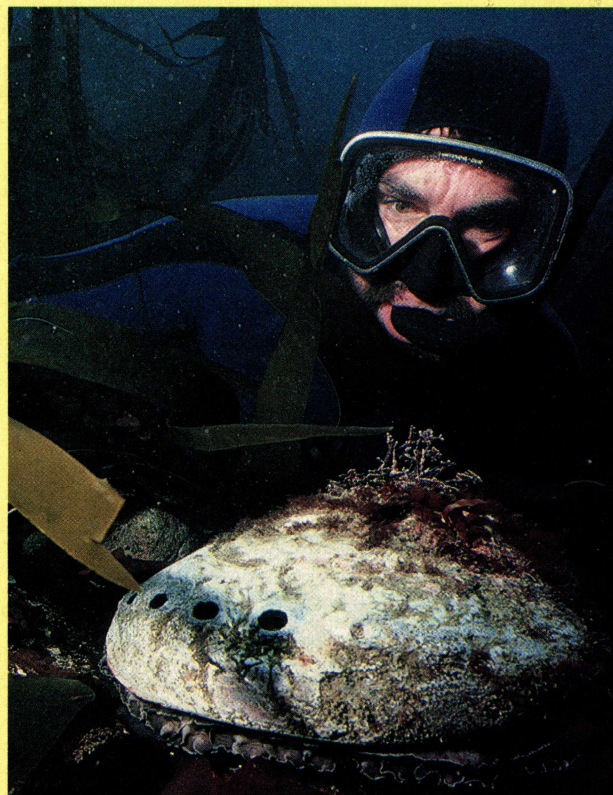
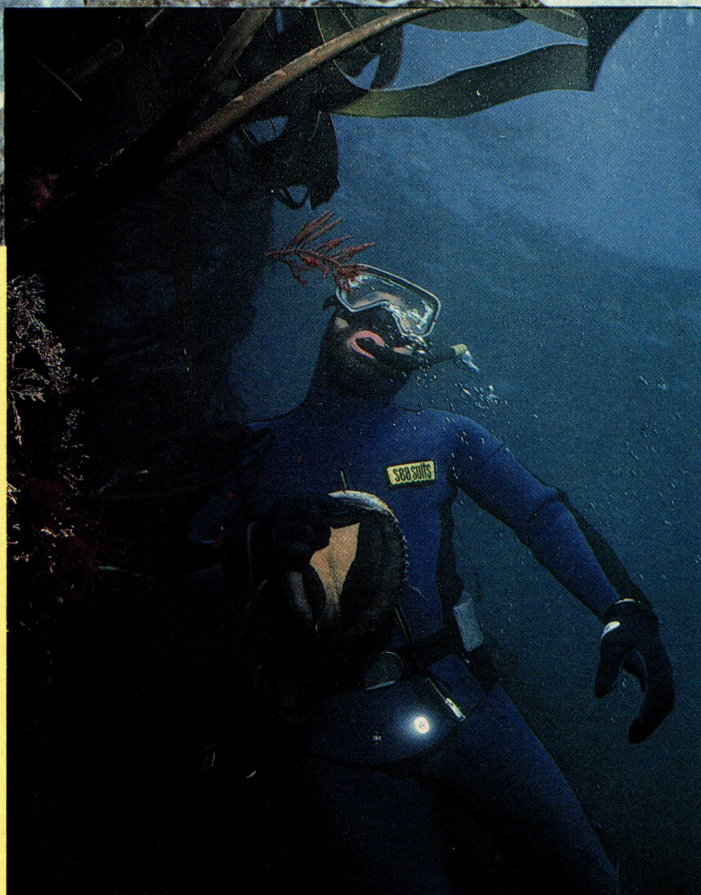
TEXT AND PHOTOGRAPHY BY JIM AND CATHY CHURCH

If you are looking for an ISO 50 color slide film for U/W photography or a replacement for a discontinued ISO 64 film, consider Fujichrome RF 50. We tested it in three typical U/W situations—wide-angle, close-up and macro—and were pleased with the results. Our test exposures were taken by several different divers during an advanced U/W photography course. Several accomplished photographers were able to view and evaluate the processed color slides. And, because many of the same scenes and subjects were photographed with other films, we could make direct comparisons.

WIDE-ANGLE

For the wide-angle test, Jim used a Nikonos 15 mm lens and twin SB-102 strobes with wide-angle diffusers. He posed Cathy by several different uprights at the midsection of the wreck of the Rhone. The uprights were encrusted with white, yellow, red, green and purple marine growths and Cathy wore basic blue and yellow dive gear. She posed with an SB-102 strobe set for slave mode and fitted with a wide-beam diffuser. The resulting color slides had sharp, colorful, fine-grain images with rich blue backgrounds! Several of the slides were taken with an upward camera angle, so





Clockwise from left: Red abalone, *Haliotis rufescens*, after collection (note: one animal has extended its foot out from its shell). A free diver surfaces with a large red abalone. Two divers battle surf on a rocky Northern California shore. A diver displays his prize. The shells of abalone are often covered with marine growth of various types. This growth matches the growth on the surrounding rocks and camouflages the animals. During the day abs hide under rocks and in crevices and it takes an experienced eye to detect them.

HUNT FOR THE GIANT ABS

Northern Californians Free Dive For Gourmet Delicacies

TEXT AND PHOTOGRAPHY BY STEVE ROSENBERG

An abalone is a shelled marine gastropod, highly regarded as a seafood delicacy on the West Coast of the United States. The delicate flavor of the large foot, when properly prepared and cooked, and the use of the shell for making jewelry and trinkets, make this animal so highly prized its population has been drastically reduced over the past few decades. The red abalone, *Haliotis rufescens*, now rare in the intertidal regions of the California coast because of heavy commercial fishing and its popularity with sport divers, is primarily a subtidal form. However, in rocky, wave-swept areas of Northern California from Jenner to Mendocino, the red abalone is still fairly abundant in shallow water.

While most divers are aware that the red abalone makes a delightful banquet, few divers know much about the animal itself. Its reddish shell is rough, nearly corrugated and often overgrown with algae and encrusting animals.

The breeding season of the abalone is not very well defined but spawning is believed to take place predominantly in the spring and summer months.

Once the eggs are fertilized, the free swimming larvae develop in from 12 to 24 hours, depending upon water temperature. The free swimming period lasts from five days to two weeks, again depending primarily upon the temperature of the water. During this free swimming planktonic larval stage, the mortality rate is extremely high, offsetting the female abalone's tremendous capacity for the production of offspring. At the end of this stage the larvae that have not been eaten settle to the bottom, transform into their adult form and begin to graze.

The juvenile abalone are very active. They hide in tiny cracks and crevices and under rocks, and venture forth only to feed. When abalone reach breeding size, approximately three to four inches in diameter, they become more sedentary. It is generally believed that an adult abalone selects a permanent site on a rocky

surface, called a "scar." The small percentage of abalone that survive to the point where they select a permanent position is preyed upon by seastars, crabs, octopuses, fishes, sea otters and man.

While it is still young, the red abalone gives active escape responses to contact with, or proximity of, the seastars *Pycnopodia helianthoides* (the sunflower star) and *Pisaster ochraceus* (the ochre starfish). To try to escape from the sun star, the abalone may twist violently, rock its shell, move away rapidly or pull its shell tightly to a rocky surface.

In areas where sea otters are found, most red abalone live only in deep protected crevices where the foraging otters can't penetrate, coming out in the open only to feed. In areas where the otters aren't found, however, the abalones can be found on exposed rock faces.

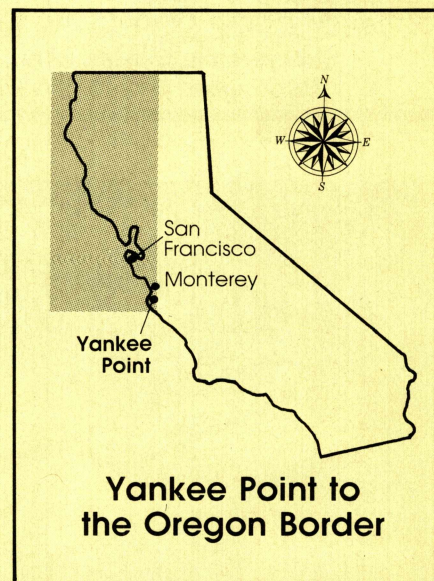
Adult abalones are herbivorous, feeding almost exclusively on diatoms and varieties of algae including kelp. It is most widely believed that after they establish a permanent site, they use the location as a home base from which they venture short distances to graze. Abalone feed on the kelp plants that grow near them or on kelp caught with the foot as the plant drifts by. A red abalone in calm, subtidal water may lift the front half of its foot and extend it to grasp plant fragments that come within reach.

Sea otters and fishes sometimes catch abalones that have raised the front lip of their shells in this manner. The abalone is then easy to dislodge by means of a bump from a fish or the prying jaws of an otter. Sea otters are also known to use rocks to break open the top of the abalone's shell.

The abalone is actually a snail, with a bowl shaped shell on top and a heavy muscular foot on the bottom. The abalone uses its foot to attach itself to rocky surfaces and to move.

There are nerve endings on all exposed parts of the abalone which apparently sense any changes in pressure. As

divers or other potential predators move through the water, they are preceded by pressure waves caused by their movements. When the abalone senses the changes in pressure, it employs its protective device of clamping itself onto its rock with tremendous suction. The only



With respect to the collection of abalone, the California coastline is divided into two major sections at Yankee Point, just south of Monterey. North of Yankee Point abs may only be taken while free diving.

practical way for a diver to remove an abalone from a rock is to pry it off with an ab iron.

In regard to this, California Sport Fishing Regulations require that, "Abalone may be taken only by hand or with abalone irons, which must be less than 36 inches long, straight or with a curve with a radius of not less than 18 inches and not less than 3/4 inch wide nor less than 1/16 inch thick. All edges must be rounded. Prohibited are knives, screwdrivers and other sharp instruments."

The size limit for red abalone is a mini-

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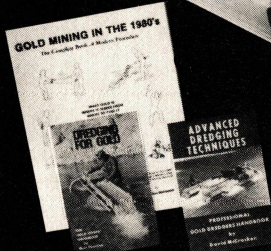
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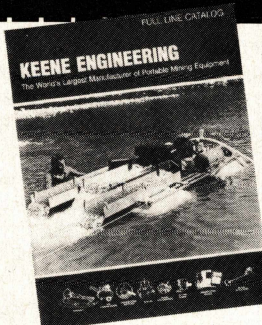
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ABALONE

mum shell diameter of seven inches. Northern California free divers are always looking for that elusive 10 inch abalone which not only provides enough meat for a banquet, but also a trophy-sized shell which makes a great mantel piece.

On a recent free diving trip to Northern California, my dive buddy, Don McMahan and I were met with unusually flat seas and uncommonly good visibility (in excess of 12 feet). The diving conditions in Northern California make the taking of abalone difficult. Surface chop and heavy swells result in a good deal of surge on the bottom, making it hard to find and remove abalone even when the visibility allows divers to see anything. On this particular day the conditions were so good we opted to take along one of our cameras and took turns free diving for abs and pictures. With the still water and extraordinary visibility we were able to cruise the bottom eyeballing groups of abalone for the real big ones. By luck we discovered clusters of large nine inch abalone and decided to set up some shots.

On my turn with the camera, we dropped to the bottom in about 20 feet of water. I nestled down in the sand in front of a small cave and checked on my distance and f stops. My buddy showed up a few seconds later with two nine inch abalone already tucked under his arm. When I gave him the high sign he

NORTHERN CALIFORNIA ABALONE FACTS

North of Yankee Point (Monterey County) abalone may only be taken from one-half hour before sunrise to one-half hour after sunset and may only be taken while free diving (no scuba). Open season is April, May, June, August, September, October and November.

reached into a cluster of abalone and grabbed the one in the center. I took the shot and then noticed his eyes were bigger than normal. As I readied to take a second shot Don pulled the abalone from the hole and headed upward. Out of air, I followed him to the surface. The abalone he had gotten was not only very large, but, it was still attached to a good sized rock. Naturally, the ab was well over ten inches and Don had his trophy, but at least I got the picture.

The problem with days like this one is that experienced ab divers tend to go shopping for that trophy sized abalone. Often a sport diver will take a limit (four abalone per diver per day) and then "trade up," replacing abalone already taken, with larger ones. The Sport Fishing Regulations provide that when under-

(Continued on Page 40)

IKELITES

MINI C-LITES

Turn on a new "HALOGEN BULB" MINI C-LITE for intensity that will absolutely amaze you. We refer to this new bulb and precision reflector combination as our "Krypton Killer" compared to other small lights. Measuring 6" long and 3" diameter, the MINI C-LITE operates on four "C" cell alkaline or rechargeable batteries producing a lighting intensity for night, wreck, or cave diving. The rotating on/off switch offers easy one hand operation.

IKELITE II

The IKELITE II provides the advantages of lifetime reflector brilliance and greater intensity of a sealed beam lamp in a lantern battery powered light. It features a unique on/off switch and switch lock in a design with almost nothing to wear-out or fail. The standard six volt lantern battery provides approximately six hours of continuous light.

IKELITE II RECHARGEABLE

The IKELITE II RECHARGEABLE offers the same features as the standard IKELITE II plus utilizes a gel-cel battery and special halogen lamp, producing four times the intensity of lantern battery lights.

C-LITE I

The unique shape of the C-LITE I allows it to become an extension of your arm. It handles well and can be slipped under your belt or into the optional holster. The C-LITE I utilizes six "C" cell alkaline batteries, providing five hours of light with twice the intensity of faceted reflector/bulb combinations.

C-LITE II

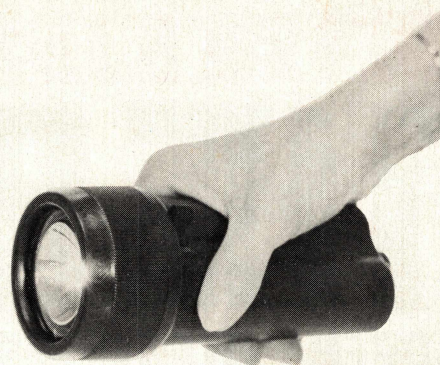
The C-LITE II is the lightest rechargeable light in its class and one of the brightest in the diving industry. The ni-cad batteries and halogen bulb provide 1.5 hours per charge with five times the intensity of the C-LITE I.

MODULAR X

The MODULAR X LITE is the ultimate for intensity and versatility in a non-rechargeable light. It utilizes six "D" cell alkaline batteries to produce six hours of light at an intensity almost equal to rechargeable lights in the \$100 price range. This Lite can easily be converted to the SUPER-LITE.

SUPER-LITE

Unquestionably the worlds brightest diving light. The SUPER-LITE comes with a removable ni-cad battery module and dual-filament lamp. The ni-cad module will provide about one hour of extreme high intensity light with the spot beam or two hours of lower intensity with the wide angle flood beam. Ni-cad battery module can be recharged in only three hours.



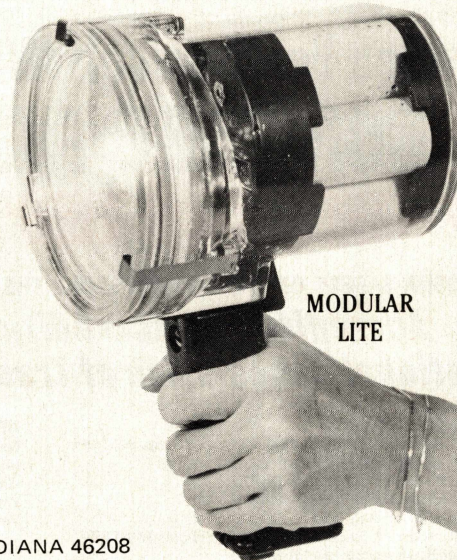
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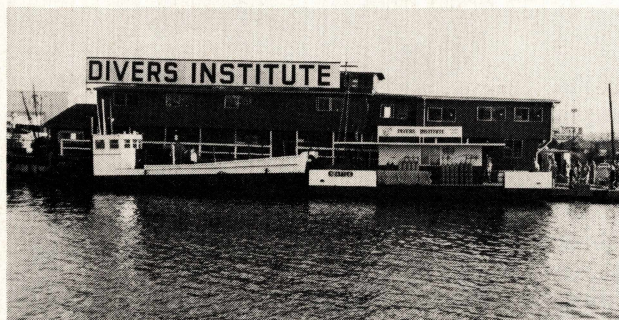
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CAPE ANN

(Continued from Page 29)

this dive is fine even close to the beach.

Like Folly Cove, Cathedral Rocks becomes silty in a northeast blow but parking here is less of a problem since it is legal on one side of Phillips St. Here, and wherever you dive on Cape Ann, remember you're in people's neighborhoods, sometimes almost in their backyards. Recently we observed a diver using a resident's car as a platform for his tanks. Thoughtlessness gives the sport a bad name and encourages towns to write statutes limiting its practice. Be courteous. Clean up any debris you create and you'll be welcome next time.

For sheer convenience, Front and Back Beaches can't be beat. In the center of Rockport, they are within an easy walk of any number of inns and restaurants, have plenty of parking across the street and, since the beaches are sandy and gently sloping, present no entry problems. You will find the usual species of fish and the dive is especially good for beginners. Because these beaches are public bathing areas summer diving is banned during midday. Check with the local authorities for the times it is permitted.

Take Rt. 127A south out of Rockport and up the small hill. Follow the second left, Norwood St., out to the water. Of all Cape Ann sites, Old Garden is probably most suited for a night dive. Because the beach is flat and mostly sand, entry presents no problem, even in the dark. The bottom is sandy for about the first three minutes out from shore and then you'll find a crescent of kelp covered rock. This crescent works as an orientation structure especially useful at night. Along with fish and crabs, you're likely to find an extensive array of nudibranchs, sometimes as many as six species gathered together. In the spring, hundreds of jellyfish blow into these waters and intermittently Old Garden is visited by vast schools of sea butterflies, translucent planktonic gastropods that look like tiny creatures from some marine version of *Star Wars*.

Since Old Garden is a swimming area, summer diving is limited to early morning and late afternoon, as is parking. There is a small lot adjacent to the beach; parking in it ought to be no problem when diving is allowed. Old Garden gets silty in northeast weather. It remains clear, however, in a prolonged northwesterly, a wind that can cloud some of the other sites.

Should you have the bad luck to visit Cape Ann during a period of continued northeast winds, you will not have to tour art galleries and whaling museums.

South facing Pebble Beach clears out as the others silt up and recently, in weather that had turned other spots to brown soup, we found a contingent from the North Shore Frogmens Club taking advantage of this site's clear, calm water. To get there follow Rt. 127A south from Rockport for about two miles. Bear left onto Penzance and follow that around to the left until it parallels the beach. This is another swimming area and diving is limited during the summer months. However, parking is plentiful and if you arrive early, late or offseason, when Cape Ann diving is best, you should find the spot almost deserted.

Entry is simple, with the sandy bottom gradually falling away until, at about 30 feet, there is the first of three low rock reefs running roughly parallel to the beach. These reefs can serve as orienting devices although they are not foolproof and toward the east end can be confusing. The rocks provide footing for *Laminaria* and sea lettuce and the observant diver will discover pipefish hiding in these weeds. Sea ravens, skates, flounder, wolf eels, ocean pout and an occasional lobster inhabit the rocky areas and in the summer Pebble Beach is sometimes visited by the spectacular lion's mane jellyfish, a highly toxic creature that can be eight feet wide. Because it is roomy, flat and calm, Pebble Beach is used by diving groups. It would be an ideal choice for the dive enthusiast accompanied by nondiving family members: It's right for swimming, picnicking and sunbathing as well as diving.

Getting to Cape Ann is simple. Follow Massachusetts Rt. 128, the beltway that cuts a semicircle around Boston, north until it ends. You'll be on Cape Ann. Routes 127 and 127A, the roads that follow the cape's convoluted shoreline, are clearly marked. Cape Ann is so small that getting lost on it requires some skill, so once there, you should have an easy time finding your way around.

Because the area caters to tourists year-round there are hotels, motels and guest houses everywhere. An incomplete but adequate list of accommodations, including camping and restaurants, is available free from the Cape Ann Chamber of Commerce, 128 Main Street, Gloucester MA 01930; (617) 283-1601. Make reservations early, even if you plan an offseason visit.

There are probably as many restaurants in the area as guest houses and you can find anything from sandwiches and beer to haute cuisine with a little looking. Rockport is dry; Gloucester and nearby Essex are not. We are partial to Woodman's, an "eat in the ruff" spot in Essex and to the Blackburn Tavern on Gloucester's Main Street, a quiet place where you can buy good imported beer, shoot darts in the bar and eat well. Candy addicts will want to sample the fudge and

(Continued on Page 40)

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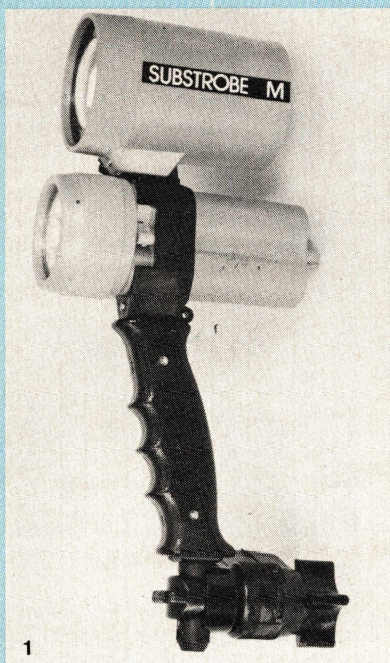
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SKIN DIVER OCTOBER 1984 37

1984 SHOPPER'S GUIDE

The products listed in Shopper's Guide are those which the editors feel are of interest to readers. All specifications and claims are supplied by the manufacturers or sellers, who bear responsibility for their accuracy. It is impossible for SKIN DIVER to obtain samples of all products listed for evaluation and verification of manufacturer's claims. This listing is provided as a free service and vendors of U/W equipment are invited to submit information and black and white photos for consideration.



1 Strobe Handle/Mount—The strobe handle/mount designed for the Ikelite Substrobes M and MS allows the strobe to be aimed in any direction. The feel of the handle lets the photographer know where the strobe is aimed without looking. A bracket is included which allows installation of a Mini C-Lite. \$39.95.



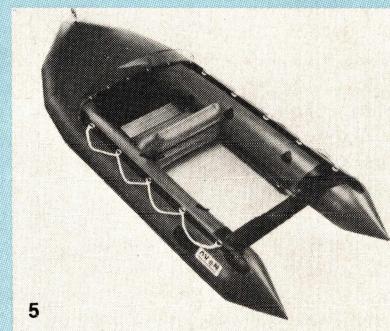
2 Poster—With a male model, Monica Hard, Miss Washington of 1982 (shown here), is featured on a poster available from Harvey's dealers. The type of wetsuits worn in the poster were used in the James Bond film, *Never Say Never Again*. The poster (\$2) is produced in co-operation with Harvey's suppliers.



3



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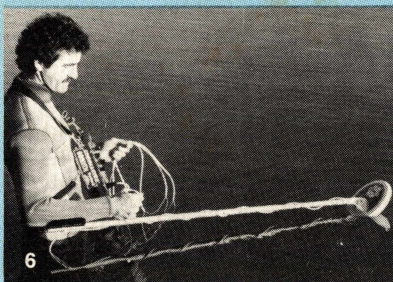


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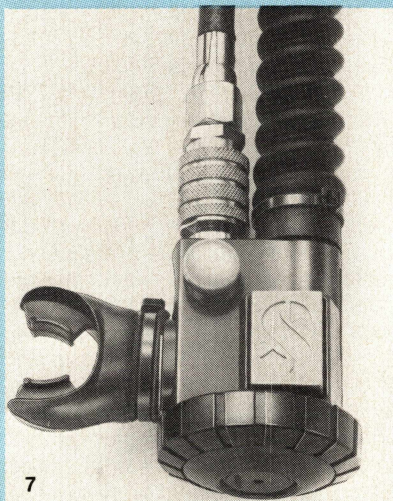
3 Jewelry—Artist Robert L. Straight has created four new pieces of jewelry to celebrate the joy of diving. Pieces are available in either 14 or 18 karat gold and sterling silver. Prices for items shown vary from \$175-\$375 depending on style and metal. Sea Symbols, 8439 Barkley Drive, Houston, Texas 77017.

4 Dive Location Pins—Cloisonné lapel and hat pins are now available with dive destination designs. The locations featured include California, Cozumel, Cayman, Hawaii and other top spots around the world. \$3.75. The pins are available from Diamond Marketing, 2939 Rising Star Drive, Diamond Bar, CA 91765.

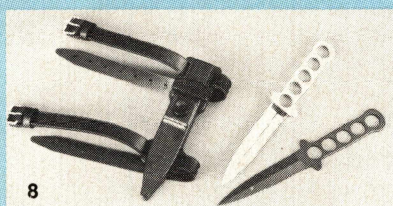
5 Aluminum Floorboards—Avon now offers aluminum floorboards as an option on its medium size Sportboats. The metal floorboards withstand scratches and dings from dive gear without requiring periodic resurfacing. The aluminum floorboards add \$150 to boat price. See your nearby Avon dealer for details.



6



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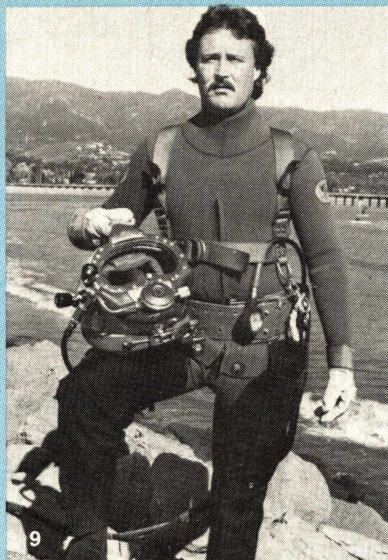


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6 Metal Detector—The 6000/Di Series 3 metal detector from White's Electronics has a preset position on each control which takes the frustration out of adjustment for the beginner. The system also has a visual discrimination indicator, high/low sensitivity setting, positive controls and a small control box. \$599.95.

7 Inflator/Regulator—The A.I.R. II combines a power inflator and second stage regulator in one convenient, lightweight unit and thus eliminates fumbling for a back-up regulator in an emergency. The diver knows where the A.I.R. II is since he/she often uses it to regulate buoyancy. \$195. From Scubapro.

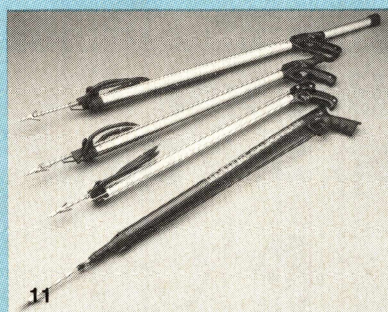
8 Dive Knives—The Arm/Leg Knife from Tabata has a one piece design of stainless steel, two cutting blades and a saw tooth edge. The sheath has leg/arm straps and a press-lock mechanism. The knife fits in the special pocket on the 800 series BC jacket. The knife is available with anodized gold or black finish. \$42.



9



10



11

9 Anti-Chafing Pants—Diving Systems International now offers anti-chafing pants for the working diver. Made of rugged ballistic nylon, they offer protection for all exposure suits, have lots of pocket space and are available in medium and large sizes for \$50. DSI, 425 Garden Street, Santa Barbara, California 93101.

10 Dive Mitts—MK 5 Dry Mitts from Viking-America are built of sturdy, waterproof EDPM rubber, with rubber tape vulcanized over the seams. The mitts have locking rings which complete the seal to the wrists of Viking drysuits. Inner gloves of foam insulation keep hands warm in cold water. Split finger design. \$122.

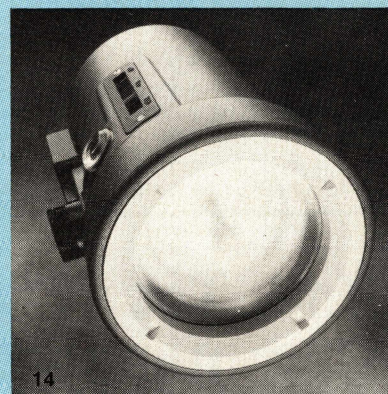
11 Spearguns—SeaQuest/Mares now offers a full line of spearguns. The pneumatic guns are available in seven sizes. Guns powered by rubber slings include the Magnum series (six sizes), Explorer series (three sizes), and Carbine series (three sizes). From \$45. Optional tips and other accessories are available.



12



13



14

12 Flexible Camera Housing—The EWA-Master housing is now available to fit compact, auto-focus, 35 mm cameras with or without built-in strobe. The auto-focus works through a transparent plastic window. The housing is made of double laminated, flexible PVC. Depth rated to 24 feet. \$49.95. Pioneer & Co.

13 Dive Gauges—The Dacor Maximum Depth Gauge (\$80) shows present depth, max. depth and is color coded—green for no decompression depths, yellow for sport diving depths and red below 130 feet. The Two Gauge Console (\$150) contains the Maximum Depth Gauge, SPG and temperature gauge.

14 Underwater Strobe—The 3000 series strobes from Oceanic feature: 150 watt-seconds of power with a guide number of 85; a 110 degree beam angle; 0.6-3.5 second recycle times; and a two-in-one cord connection/recharge port. Model 3003 (multipower) is \$539 plus cord; 3002 (automatic) is \$586 plus cord.

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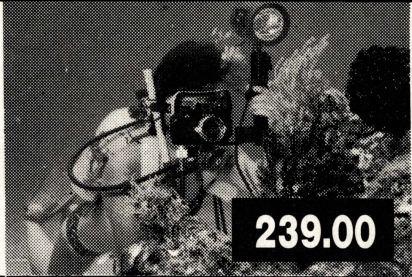
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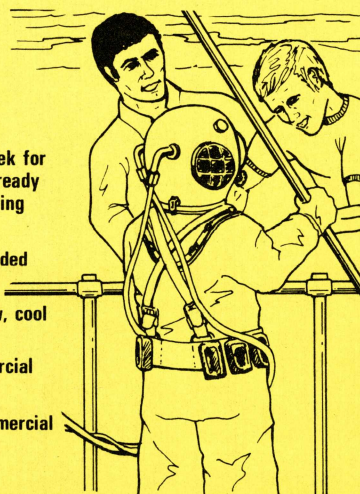
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CAPE ANN

(Continued from Page 37)

Swiss chocolate at Tuck's Pharmacy in Rockport. Some think that's the best thing about Cape Ann.

Problems with either diving or photographic equipment can be resolved at both New England Divers, 131 Rantoul St., Beverly, MA (617) 922-6951 or (617) 665-2228 and Northeast Scuba, 125 Liberty St., Danvers, MA; (617) 774-7296. Neither Beverly nor Danvers is immediately adjacent to Cape Ann, but the inconvenience of a half hour drive is mild compared to the hassle of unusable gear. Should you choose to visit Northeast Scuba, look up Bob Boyle. He's a knowledgeable diver, teaches underwater photography and can give you up-to-the-hour reports on conditions around the cape.

A final note: Cape Ann diving is good year-round. The water is the clearest when it's coldest and alive with creatures you'll never see in the tropics. Drysuits are comfortable when the mercury drops, but wetsuit winter diving is done by the hardy. So, just because there might be a nip in the air, don't stay home. Come on up to Cape Ann and walk right in. 

ABALONE

(Continued from Page 34)

sized abalone are pried off a rock they must be replaced immediately with the shell outward to the surface of the rock from which it was detached. The purpose for this restriction is to protect shorts from being left easy prey to predators. This provision of course applies to all abalone which are removed but not kept by the diver. Most divers are aware of the importance of replacing abalone properly, but they do not consider the effects of removing abalone which they don't keep.

Abalone are hemophiliacs; when cut by an abalone iron they will bleed uncontrollably. Invariably, when abalone are removed through the use of pry bars, they receive cuts of varying sizes. When an abalone is removed from its permanent location the chances are very great it will be improperly replaced, replaced in an area where food is not as abundant or be fatally injured.

When you consider that it takes abalone 7-14 years to grow to legal size, it becomes important to exercise care and consider the rationale behind the rules. Diving for abalone is exciting, challenging and rewarding. However, we as sport divers should begin to accept the responsibilities for preserving the abalone, in addition to reaping the benefits from its existence in our ocean playground. 

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First, no one prepares people for Instructor training the way PADI does. Not only is the PADI Continuing Education System the most comprehensive in terms of content and support materials, it's the only system that offers both a full-length

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Second, no one conducts instructor training the way PADI does. Instead of the traditional "Hell Week" approach to Instructor training, PADI offers a unique, 80-hour Instructor Development Course (IDC) that makes it easy for qualified individuals to learn how to teach the PADI System. Utilizing a standard curriculum, comprehensive AV materials and an in-depth student workbook, each PADI IDC meets the same high standards for quality, no matter where it's offered. And each is taught by a qualified Course Director — a PADI Master Instructor who has received many hours of specialized training

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Third, no one evaluates instructors the way PADI does. The final phase of the PADI Instructor-certification process is a two-day Instructor Evaluation Course (IEC). Here, the knowledge, skills and teaching ability of each Instructor candidate is assessed by a professional Instructor Evaluator from PADI Headquarters. This ensures not only a fair and objective assessment, but also that each new Instructor has been observed and tested by PADI Headquarters itself.

Fourth, no one offers the options for instructor training that PADI does. These range from the eight-week Gold Curriculum at PADI International College, which takes Open Water divers up to and through the final instructor-evaluation process (and provides additional training in retail operations and equipment

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Finally, nobody offers the opportunities for certified Instructors that are available through PADI. With over 750 PADI Training Facilities worldwide, there is simply more demand for PADI Instructors than for those of any other agency. Shouldn't you take advantage of this demand? For more information on becoming a PADI Instructor, write: PADI, 1243 E. Warner Ave., Santa Ana, CA 92705.

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INCOME	Commercial diving school graduates can easily make \$50,000-\$80,000 a year.
	Recreational diving instructors trained by PADI International College make good money.
FRINGE BENEFITS	Commercial diving is fun and exciting.
	Teaching recreational diving is fun and exciting.

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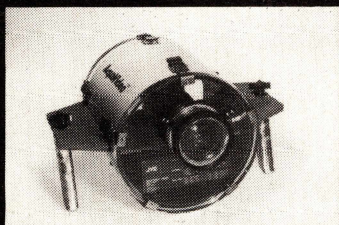
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FUJI 50

(Continued from Page 31)

ground. The color and detail were excellent and we have no qualms about saying this after comparing the Fuji slide with similar slides we've taken on other top-rated films.

PROCESSING FUJICHROME

You can purchase mailers and send your exposed film to a Fuji processing lab or you can take the film to a photo supply store that can send it to a Fuji chain laboratory. Fujichrome films can be processed with either Process CR-56 or E-6. With the E-6, you can use either the standard or shortened version.

CONCLUSION

As previously mentioned, Fujichrome 50 produces sharp images with bright colors and rich blue backgrounds. It is an excellent medium-speed color slide film for U/W photographers who wish to use a film faster than ISO 25, but slower than ISO 100.

For traveling U/W photographers, the E-6 processing option is an important feature. All resorts and dive operations offering color slide processing (to our knowledge) use an E-6 or E-6 compatible system. Thus, you can have your Fuji slides processed at these resorts. If you wish to process your own film in your hotel room, you can use any E-6 compatible home processing kit.

It is easier to transpose exposure values from ISO 50 to ISO 25, 100, 200 or 400, than from ASA 64. (Note: Each time the film speed is doubled, the film requires one less f stop of exposure to produce the image on film). When changing from Fuji 50 to Fuji 100, for example, your exposure changes by a full rather than a partial stop. Thus, you tend to make fewer exposure errors when changing films. However, if you accidentally expose Fuji 50 as if it were Fuji 100 or vice versa, you can have the film pull or push processed (processed for a lower or higher film speed) in E-6.

Although it may seem to be a minor advantage at first, the transparent Fuji film canisters are great. You don't have to pick up or open the canister to see if it is empty, if the film has been exposed or to double check the film speed. You simply glance through the canister.

Fujichrome RF 50 color slide film is available in 20 and 36 exposure cassettes for \$4.59 and \$6.49, respectively, without processing. Processing mailers for 20 exposures cost \$3.60; mailers for 36 exposure rolls cost \$5.85. For more information, contact your local photo center or write directly to Fuji Photo Film Co., Ltd., 350 Fifth Avenue, New York, New York 10001.

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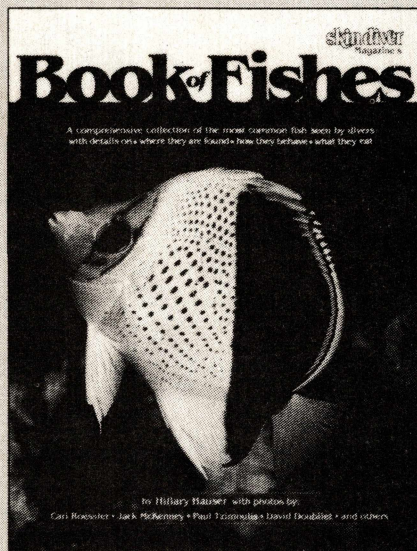
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BY JOHN STRINGER

In the Atlantic Ocean, 16 miles off Cape Hatteras, North Carolina, a team of scientists, archaeologists and divers began a five day investigation of the famed Civil War ironclad, USS *Monitor*. The ship has rested upside down beneath 36 fathoms of water for the past 122 years.

Sponsored by the National Oceanic and Atmospheric Administration, with assistance from the non-profit Harbor Branch Foundation, Inc., of Fort Pierce, FL and East Carolina University in Greenville, NC, the expedition was designed to help determine the feasibility of raising the turret of the Civil War relic. It was also planned to recover the ship's anchor.

Dr. Nancy Foster, director of NOAA's National Marine Sanctuary Program, describes the *Monitor* as a "national treasure" that continues to draw widespread public interest. Its site was declared a national marine sanctuary in 1975; the first of six marine sanctuary sites to win such a designation.

"The story of the *Monitor* and its historical significance is known to school children from grade one on up," Foster said. "It is also important from an engineering standpoint. It changed the whole complexion of the Navy and it played a significant role in the Civil War although it was only in existence about nine months."

The 1983 *Monitor* expedition began early Sunday morning, August 21. The small group of NOAA and East Carolina officials were aboard a chartered fishing boat that moved from the Hatteras Coast Guard Station through the quiet waters of Pamlico Sound toward Hatteras Inlet. The trip to the research vessel *Johnson* would take less than an hour.

The *Johnson*, a 125 foot converted Coast Guard cutter, had left Beaufort, NC, on Saturday with five days of food, stores and fuel and arrived on what was believed to have been the *Monitor* site at 5:00 am Sunday. Beset with problems with its system of navigational aids, the *Johnson* was to spend the entire day crisscrossing a mile-wide circle in search of the sunken wreck. It was 7:15 pm when the submersible *Sea Link I*, on its third dive, finally pinpointed the *Monitor*. The

water was clear and visibility at 210 feet was excellent.

The research objectives of the 1983 expedition were video tape and still photographic documentation of various portions of the wreck, collection of engineering data, sediment testing and an excavation at the base of the *Monitor's* turret which NOAA hopes to raise in 1985. The primary goals, however, were the stabilization of the hull and the location, documentation and possible recovery—if divers could manage it—of the ship's anchor, which would be the first major artifact raised from the wreckage since a lantern was recovered seven years ago.

During a second expedition in 1979, scientists discovered that, structurally, the *Monitor's* turret, sheathed in eight inch iron plating, was in excellent condition. Probing the turret floor with a three foot compressed gas probe, divers found that although the wood floor of the structure had deteriorated, it remained intact under a layer of sediment and coral. Among the artifacts recovered from the wreck was a glass jar containing a relish with mushrooms. It was found in what would have been the captain's quarters.

The *Monitor* rests upside down, 210 feet underwater, in what is called the Graveyard of the Atlantic. It sank during a storm December 31, 1862, while being towed to Beaufort, NC to participate in a Union blockade of Confederate ports. The ironclad ship, which had made naval history earlier that year, has the world's first revolving gun turret and 40 odd patentable mechanisms, including the first flushing marine toilet, a unique steam engine in a pressurized engine room and what may be the first practical example of a sea-going screw propeller.

The *Monitor*, with two guns in its unique steam powered, swivel turret, clashed with the six gun CSS *Virginia*, formerly the USS *Merrimack*, on March 9, 1862, in Hampton Roads, off Norfolk, VA. Described as the world's first battle of ironclad ships, the two ships battled four hours, exchanging fire sometimes at point-blank range. Although the fight ended in a stalemate, neither ship survived

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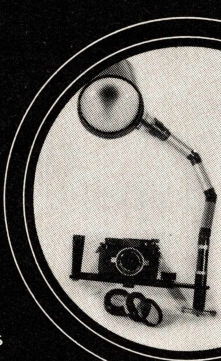
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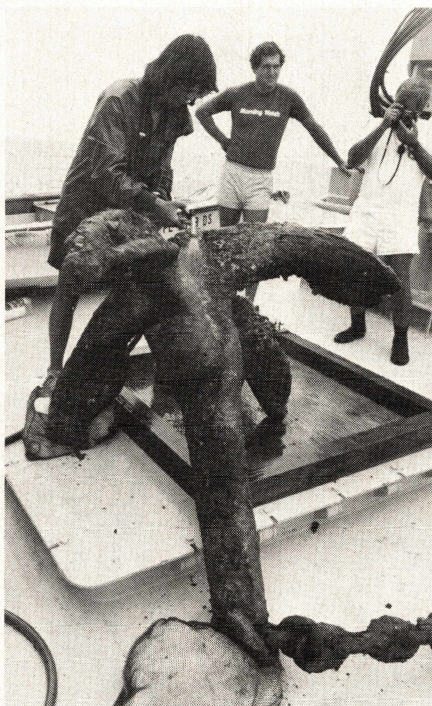
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USS MONITOR

the year. The *Virginia* was blown up by its own crew two months after the battle and the *Monitor* never made it past Hatteras. Both ships, however, made history: They signaled the end of the era of wooden fighting ships and the beginning of modern naval history.

Historians believe it was the *Monitor's* anchor and anchor chain that ultimately caused the ship to capsize and sink to the ocean floor with 16 of its 57 crew members. In a futile attempt to stabilize the ship by pointing it into the waves, the 780 foot anchor chain was played out from the ironclad's distinctive anchor well, which permitted crewmen to drop



NOAA's Nancy Foster inspects the large anchor from the *Monitor*. The anchor was brought to the surface by lift bags inflated from the submersible, *Johnson Sea Link I*.

and weigh anchor from below deck. When the chain ran out, it pulled the lining out of the anchor well. With only 11 inches of freeboard, the 20 foot high waves bore down on the now anchored bow of the ship, washed over the deck and into the vessel itself through the anchor well and the intakes in the engine room, extinguishing the boiler fires. Once the fire was out, the pumps ceased to work and the ship began to sink.

Monday, August 22, 1983—diver John D. Broadwater, on loan to the *Monitor* expedition from the Virginia Research Center for Archaeology, spotted the five foot, coral encrusted anchor about 150 yards off the port bow, partially buried in about two and one-half feet of sand. After powerful water jets, controlled from within the

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submersible, flushed sand and debris away from the anchor and part of its chain, Broadwater attached a large flotation bag, a pinger and harness, to the anchor in preparation for bringing the historical artifact to the surface.

Preparations to raise the anchor, however, were soon to be temporarily postponed. In addition to heavy seas, the National Weather Service reported thunderstorms and rain showers extending from Cape Hatteras 175 miles east into the Atlantic Ocean. The *Johnson*, which would have normally remained on the *Monitor* site, moved closer to shore late Monday evening and operations had to be suspended through Tuesday.

Everything seemed ready Wednesday morning. The choppy waves had subsided and winds were down from 20 knots. Aboard the *Johnson*, diver Craig Caddigan, of Harbor Branch, prepared for his descent in the submersible. "All we need is one good dive and we can bring the anchor up," he said.

At more than 200 feet below the ocean's surface, Caddigan discovered there was near zero visibility. He left the submersible and, after removing a fishnet that had been caught on the anchor, he groped his way, hand over hand, up the anchor chain, counting each of its links for a distance of about six feet. At that point, he cut the chain with a cutting rod. Shortly before noon, Caddigan inflated the silver-white lift bag with an air hose connected to the submersible and the anchor began to rise slowly.

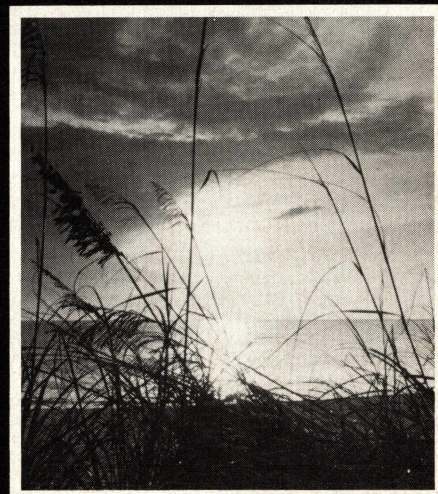
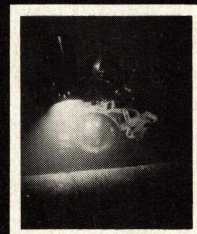
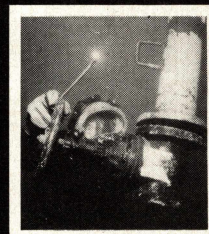
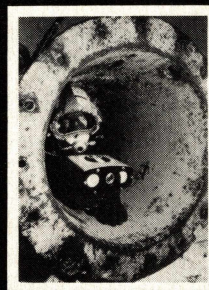
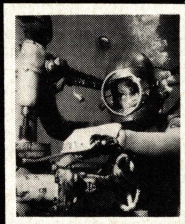
On the *Johnson*, scientists and crew waited for the flotation bag to arrive on the ocean's surface. But for some unexplained reason, the air bag had ripped, and the 1,450 pound anchor was lost—temporarily. For more than an hour, the sub probed for the anchor and bag. It found the pinger, and then the anchor, about 450 feet from its original position.

Coinciding with the five day *Monitor* expedition was the deteriorating weather. Tropical storm Barry was crawling up the coast and on Wednesday it was 230 miles east of Melbourne, Florida. Although it turned westward and headed across Florida and into the Gulf of Mexico, heavy seas and high winds at the wreck site again prevented the *Monitor* expedition from obtaining color videotaping of the entire vessel, examination of core samples of the ocean floor around the *Monitor's* turret and recovery of its unique anchor. The project was called off on Thursday and the *Johnson* headed toward Beaufort, NC. There would be one more attempt to raise the anchor of the historic warship.

It is the vessel's turret, however, that holds the chief interest for archaeologists and historians. The nine foot high, rotating turret, with an inner diameter of 21 feet, housed two of the most powerful guns ever mounted on a ship—11 inch

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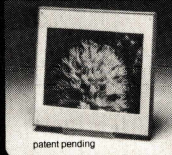
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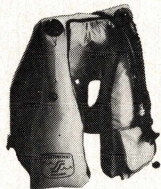
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USS MONITOR

Dahlgrens that could fire explosive shells. The *Monitor* and its turret, dubbed the Cheesebox, was designed by John Ericson, a Swedish-American inventor. It was built in 100 days in 1861-62 at East River shipyard in the Greenpoint section of Brooklyn, New York.

Modifying its schedule, the *Johnson* returned to the *Monitor* site Monday, August 29. The mission had been extended one more day.

Good weather conditions and visibility below the ocean's surface were conducive to launching the submersible at 7:30 am. It took slightly over two hours for the mechanical arm on the sub to place a sling and two lift bags on the anchor.

Inflated from the sub, the bags lifted the anchor and six feet of chain to the surface within 21 seconds.

As soon as the anchor was hoisted aboard the *Johnson*, it was rinsed in salt-water, secured to a pyramid-shaped structure attached to a wooden platform that supported it in an upright position, and then packed in water-absorbent material. A perforated rubber hose entwined the gauze-like material covering the artifact, over which dark plastic was wrapped to prevent leakage. The package, constantly bathed in seawater until the *Johnson* docked at Beaufort, was trucked to East Carolina's archaeological preservation laboratory in Greenville.

At Greenville, the anchor was lowered into a large empty tank, quickly filled with

1800 INDIAN RELISH

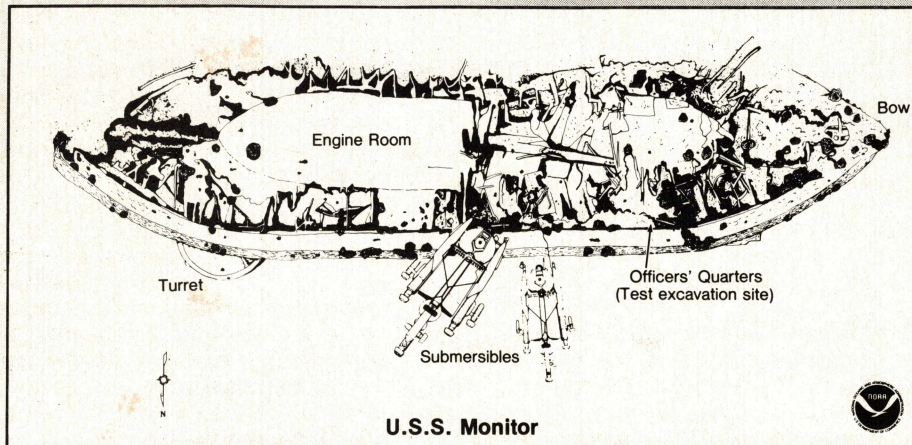
"Clean, skin and slice mushrooms. Place layers of mushrooms and five table-spoons of salt in a fitting stone crock. Let it stand in a warm place from sunset to past sunrise.

"Rub the mushrooms through a sieve and add any liquor that has gathered in the crock. Measure this and add one pint (two cups) of vinegar and two tablespoons each of pulverized cloves, mustard, all-spice, and mace or nutmeg for each quart (four cups) of mushroom pulp and juice.

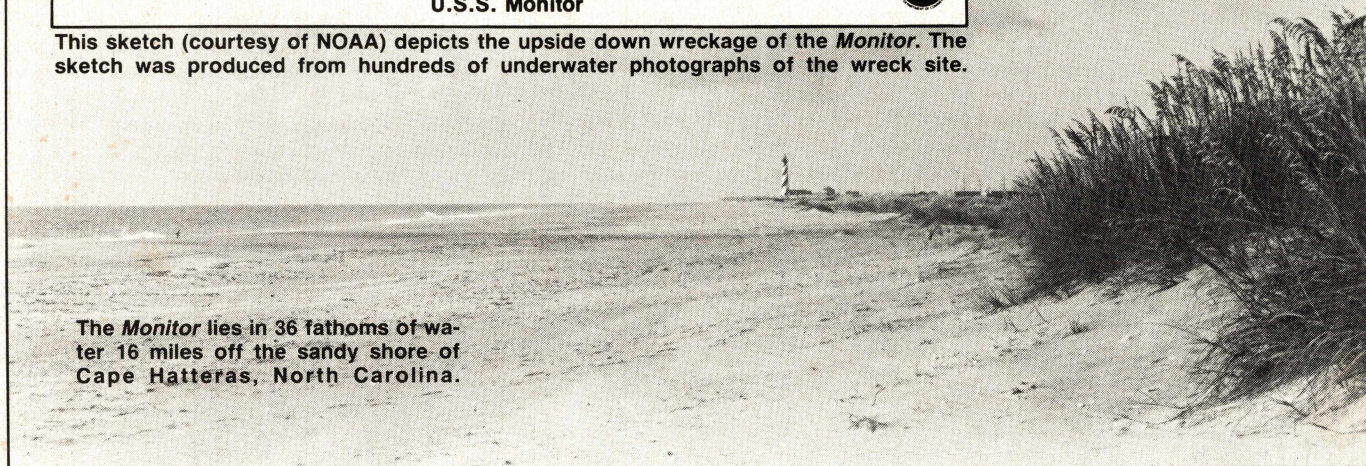
"Put all this into a preserving kettle and cook slowly until it acquires ketchup thick-ness. The best way to keep it is in small wide-mouth bottles stoppered by new and well-fitting cork."—Kay Shaw Nelson

fresh water to begin the conservation process. Estimated to take two years to complete, the process calls for an electrical current to be imposed on the anchor to remove its encrustations. Acting as a cathode, a negative pole from which electrons and hydrogen gas flow, the process will break down corrosion products and stabilize them.

In the meantime, NOAA is planning another expedition to the *Monitor* site during the summer of 1985.

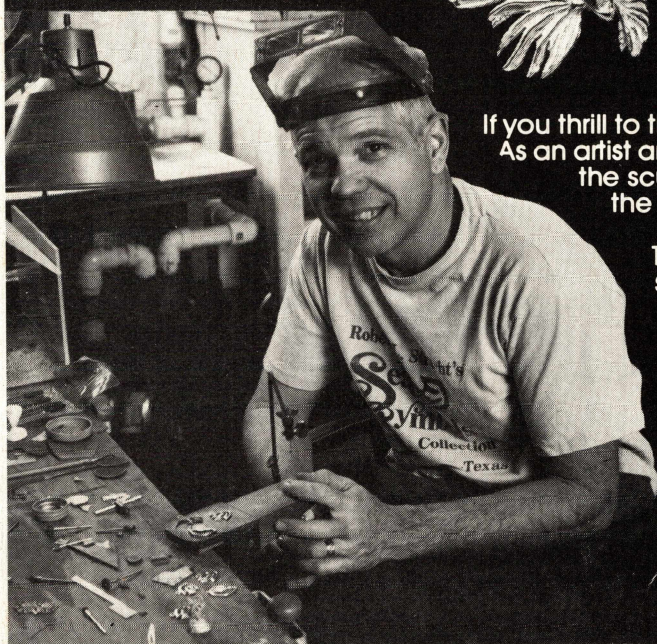


U.S.S. Monitor
This sketch (courtesy of NOAA) depicts the upside down wreckage of the *Monitor*. The sketch was produced from hundreds of underwater photographs of the wreck site.



The *Monitor* lies in 36 fathoms of water 16 miles off the sandy shore of Cape Hatteras, North Carolina.

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"We were the very first national agency involved solely in diving education and we are still committed to providing the best possible training and service to the total diving community," says Walt Hendrick, Sr., national training director for the National Association of Underwater Instructors (NAUI).

To provide that support and service, NAUI has a host of new projects underway. It has introduced more programs and products in the past two years that make it even more unique among agencies and make enrollment in a NAUI program even more beneficial.

Hendrick says: "Among knowledgeable people, NAUI certification is and always has been the certification to have and even NAUI instructors who are no longer active always like to be identified as a NAUI instructor. It's an aura, a mystique, that can't really be fully appreciated by those who have never been through a NAUI

course or, especially, the NAUI Instructor Training Course."

Apparently, this appeal is great, NAUI certified 23 percent more instructors in 1983 than 1982, continuing a history of steady increases.

In talking and working with NAUI divers and instructors at all levels, it becomes rapidly evident that "The Quality Difference" is more than a slogan to NAUI. It is a commitment reflected in every aspect of the organization's activity.

"To most, diving education is a business—to NAUI instructors it's a passion," says Marshall McNott, executive director of NAUI. "NAUI has been perfectly willing to relinquish the role of being the biggest in order to ensure it remains the best—it makes no compromises in the quality of the NAUI instructor or the training the NAUI student receives. We could lower our standards, for example or simply accept other-agency instructors into NAUI without testing or evaluation, but NAUI would rather maintain its quality."

NEW COURSE STANDARDS

That quality is reflected in the type and number of program announcements made by NAUI in recent months. Completely revised standards for all NAUI courses were sent to all NAUI leadership members this June. The result of thousands of hours of work and the input of hundreds of instructors, the revised standards reinforce the NAUI commitment to quality.

"The new standards reflect what NAUI stands for," says Hendrick. "They make no compromises on training excellence, but also take into account a pragmatic approach toward competition in the diving business world of the future. These standards increase the marketability and desirability of our courses while making them easier to teach."

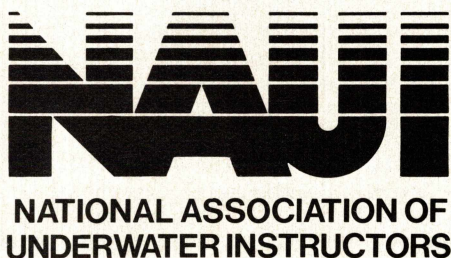
Two totally new courses were introduced in the 1984 standards while redundant programs were eliminated: The NAUI Master Scuba Diver is a completely new rating, designed for those who "wish to achieve NAUI's



highest and most prestigious non-leadership certification," but who do not necessarily wish to engage in diving training or instructional activities, according to the new standards.

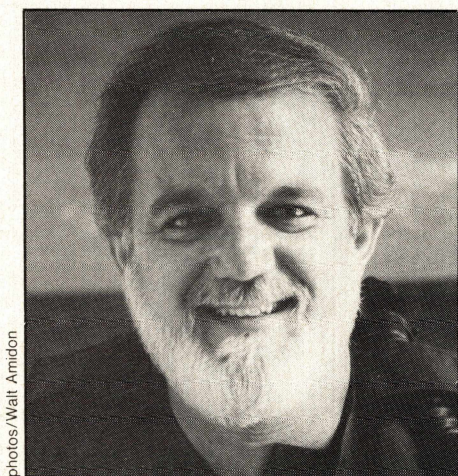
Also new is NAUI's Openwater II Course, offered as the next logical step after initial open water training. All course activities are conducted in the open water setting, and totally new graphics are featured on the certification card and other materials. The course is particularly easy to teach, as it allows the instructor to select dives that suit the area or special interests of the students.

Viewed in their entirety, the standards show a distinct, clear progression from entry level to the most advanced leadership ratings, something NAUI programs lacked in the old standards. Also available are unlimited specialty courses, such as wreck, rescue, cave or ice diving, along with instructor-specified courses. Popular resort-oriented programs such as the International Diver Recognition Program, the Entry Scuba Experience (ESE) and the Refresher Scuba Experience (RSE) have been retained.



"Safety through education"

BY PEGGY ABRAHAMS



Marshall McNott

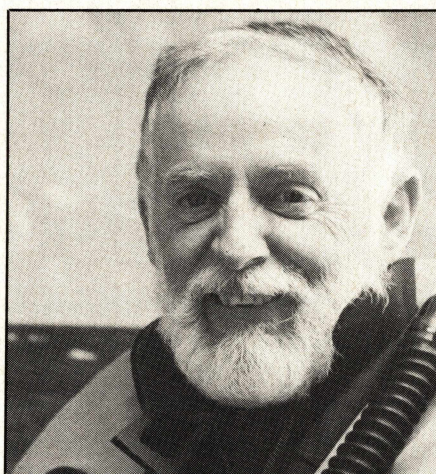
NAUI has introduced many exciting new programs and products in the last two years and is experiencing steady growth.

The revision features new, standardized organization, while retaining the traditional options for instructor flexibility along with high quality. For example, there is still a swimming requirement. "We still believe people who are out scuba diving should be able to swim," says Mike Williams, director of program and product development.

MARKETING ORIENTATION

New marketing standards come in the wake of several other significant changes for NAUI. This spring, the association launched a series of very intensive marketing programs, supervised by Dr. Marshall Reddick of California State University. While NAUI offers a product line surpassing that of most other agencies, it is a true non-profit corporation and has not traditionally been oriented toward the business aspects of diving. That is changing now.

McNott says, "It's easy to get up on an

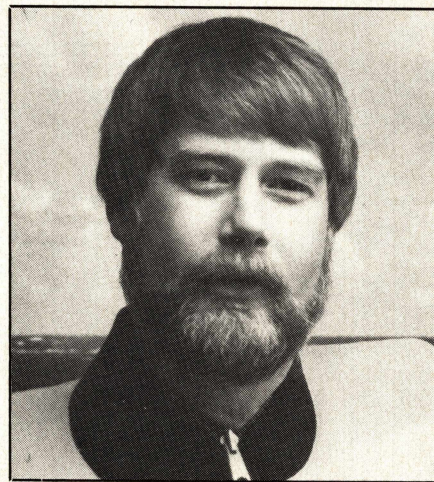


Walt Hendrick, Sr.

ivory tower and say we'll produce what they want and they'll buy it, but this is an erroneous approach to marketing. Better marketing of NAUI to the industry must be solidly based on ascertaining the genuine needs of the industry and how those needs can best be met. This approach is the key to our future."

"Because NAUI does not spend as much money on advertising as some agencies, the perception of the association by some may be out-of-date," Hendrick points out. "NAUI's roots were in universities. While we began as mostly independent educators, those days are gone. There is no such thing as true independence in today's sport diving industry," he says. "Every instructor ultimately depends on the retail dive store, just as the store depends on diving customers, whether trained in-store or through other programs. It is to everyone's advantage to work together for the betterment of the sport and industry."

In addition to a complete range of diving courses, along with training and certi-



Mike Williams

fication materials to support them, the NAUI catalogue includes more than 40 diving related books and publications that would be welcome additions to any diver's library. There are also clothing items, diving aids and a variety of educational items.

The graphics for NAUI's materials and publications were totally revised in 1983 and also reflect the modern approach the association is taking toward the business aspects of diving.

Another traditional perception of NAUI that is no longer true is the macho training and diving image. Certainly macho activity is not fostered by NAUI Headquarters. "Diving is supposed to be fun," points out Williams. "The sole reason for ensuring a person has good, thorough training is so the person will be happy and comfortable, as well as safe, in the water. No one who is ill-prepared will have fun diving, so we simply believe in making sure the divers we train are actually able to dive when they complete their course. More than one million NAUI-trained divers know and appreciate that."

INTERNATIONAL LINKS

NAUI is also unique in being a democratic association controlled by a board of directors elected by the general membership. At the 1984 board meeting, NAUI International was created to facilitate the management of NAUI's ever-increasing international affiliates. NAUI Canada and NAUI Japan exist as separate corporate structures while NAUI Australia is a branch and chapters exist in dozens of other countries, including Austria, New Guinea and the Philippines.

NAUI is affiliated with CMAS, Confederation Mondiale des Activités Subaquatiques, the international World Underwater Federation. NAUI-certified divers planning to travel abroad can obtain internationally-recognized CMAS equivalency certification cards from Headquarters.

QUALITY CONTROL

Including Australia, NAUI has ten

branches which form a network of closely-knit NAUI instructors which may resemble a family more than a professional grouping. Each branch is led by a manager who provides the vital liaison between the instructors in the field and NAUI Headquarters.

Hendrick says, "The branch managers are the backbone of NAUI. They form the nucleus of people who set the standards—if we have any doubt as to quality control we find out through the feedback from our branch managers."

NAUI also monitors quality through mailings of NAUI Cares questionnaires to graduates of all NAUI certification courses. This innovation by NAUI ensures that each person who completes training under a NAUI instructor gets an opportunity to comment on the course directly to headquarters.

One of NAUI's major areas of strength is the headquarters staff. McNott says, "It starts with people. I've put together a highly professional staff with the strongest possible expertise in their given areas. This new staff has enabled us to produce, in the last year or two, some of the most innovative and creative projects in the field and the kinds of services our members need and are entitled to. As just one example, Jim Arkison, our publications director and the editor of NDA News, has more than 40 years of experience in journalism."

BOARD OF DIRECTORS

NAUI's democratically elected board of directors is eminent in a variety of fields, such as education, medicine and research, in addition to diving.

Lyn Nelson is NAUI's new vice president and former executive director of NAUI Canada. She points out that NAUI's present board of directors includes many new persons with business expertise.

"These are experienced, knowledgeable, dedicated people—the sort of people you *should* see on corporate boards. So far we've already restructured the standards. The board is now focusing on more educational projects," she says.

Board member Mark Flahan has the distinction of being the first director elected as a write-in candidate (in the 1983 elections). Board member and former president Larry Cushman explains, "We are the only diving organization where that can happen—NAUI is really and truly operated by the members."

John Englander was elected president of NAUI in January. Englander is owner and president of the Underwater Explorer's Society (UNEXSO) in Grand Bahama and previously served as NAUI's president for two terms.

According to Englander, because NAUI functions as a democracy it has taken longer to reach a consensus on policy directives. "But once we've done that, it tends to be a better decision, and more broadly supported . . ."

Recently, NAUI has streamlined its decision-making process and the responsibilities of headquarters, the board of directors and the instructor membership have been better defined. Hendrick says, "I think we are more unified now than NAUI has ever been."

Cushman indicates that NAUI will show an even stronger surge in the next few years. The NAUI board has recognized there is a need for more instructor support materials and producing them is its next important objective.

SAFETY THROUGH EDUCATION

As a non-profit corporation, NAUI's primary goal is to promote and encourage diving safety through the education and training of the general public in safe diving activities. To perpetuate this principle, NAUI is changing by adopting state-of-the-art technology and research that is compatible with its quality approach.

NAUI instructor training is available through the various branches and at three NAUI Professional Development Centers in Orange, California; Marathon, Florida and Erie, Pennsylvania. In addition to Instructor Training Courses, the curriculum includes a range of subjects to complement the instructor rating.

NAUI is also involved in an associate degree program at the Florida Institute of Technology. The first students to qualify in this two year program were graduated this spring.

The course is the first and only one of its kind. Students are trained as NAUI instructors in all aspects and levels of marketing, diesel and gasoline engine maintenance, underwater photography, accounting, navigation and other skills a dive store manager or resort operator would need.

Compared to the development center courses, the associate degree program at FIT is more extensive but much longer. But, according to Hendrick, instructors

generally do not learn these extensive additional skills until long after they've been in the field. "The associate degree program is probably the shortest and most direct method of gaining this comprehensive a body of knowledge."

CONFERENCES/SEMINARS

As part of its commitment to diving education, NAUI initiated the International Conference on Underwater Education. The 14th such conference was held in Chicago, Illinois in 1983. It featured prominent lecturers, underwater film screenings and trade show demonstrations and displays. The prestigious Leonard Greenstone Diving Safety Award is awarded at the NAUI Awards Banquet.

This year, NAUI is hosting NAUI D.I.V.E.S Cayman from October 13 to 21, in Grand Cayman. Besides presenting seminars for diving leaders, this conference has the extra appeal of a special series of dives for participants.

NAUI DIVING ASSOCIATION

The NAUI Diving Association (NDA) is another of NAUI's educational vehicles. McNott points out, "NDA is really the only organization that is for all non-divers as well as divers and instructors. Further, NDA is not just for NAUI people—it is for people of any agency or affiliation who have an interest in diving."

Members of the association receive the monthly magazine, NDA News, discounts on NAUI books and products and other benefits. NDA is incorporated as a non-profit organization and donations to it are tax deductible.

25 YEARS OF SERVICE

Next year, NAUI celebrates its Silver Anniversary. During its 25 years of service, its membership has shown a devoted following. NAUI has attracted the dedication of some of the most prominent leaders and experts in the diving world.

Everyone who has an interest in the state-of-the-art in diving education, regardless of his/her certification, background or level of achievement, owes it to himself/herself to look into NAUI, the innovative "Quality Difference" certifying agency. The National Association of Underwater Instructors: For 25 years it has offered "Safety Through Education." For more information contact: NAUI, P.O. Box 14650, Montclair, California 91763; (714) 621-5801. 

U/W HOCKEY CHAMPIONS

The two teams from Australia, a men's team and a women's team, dominated the World Underwater Hockey Tournament in Chicago. The women's team won eight of the nine games it played and the men's team won all ten of its games.

The final standings for the women's teams, in order, were Australia, New Zealand and Canada. For men's teams, the final standings, in order, were Australia, Holland, England, Canada, New Zealand, France and Zimbabwe. ➤

MARICULTURE CONFERENCE

The World Mariculture Society will hold its 1985 annual conference at the Orlando Holiday Inn on International Drive (Orlando, Florida) January 13-17.

Mariculture is the rearing of saltwater plants and animals for commercial purposes. Mariculture has the potential to develop into a major resource for food, pharmaceuticals and energy by the end of the century.

Selected Florida Institute of Technology aquaculture students will be invited to help staff the meetings. This will provide them not only with the opportunity to hear the presentations and to meet the members of the industry, but also to give the FIT aquaculture program good exposure.

The theme of the meetings will emphasize the importance of the state of Florida in the aquaculture industry. ➤

MADAM COURSE AT CO

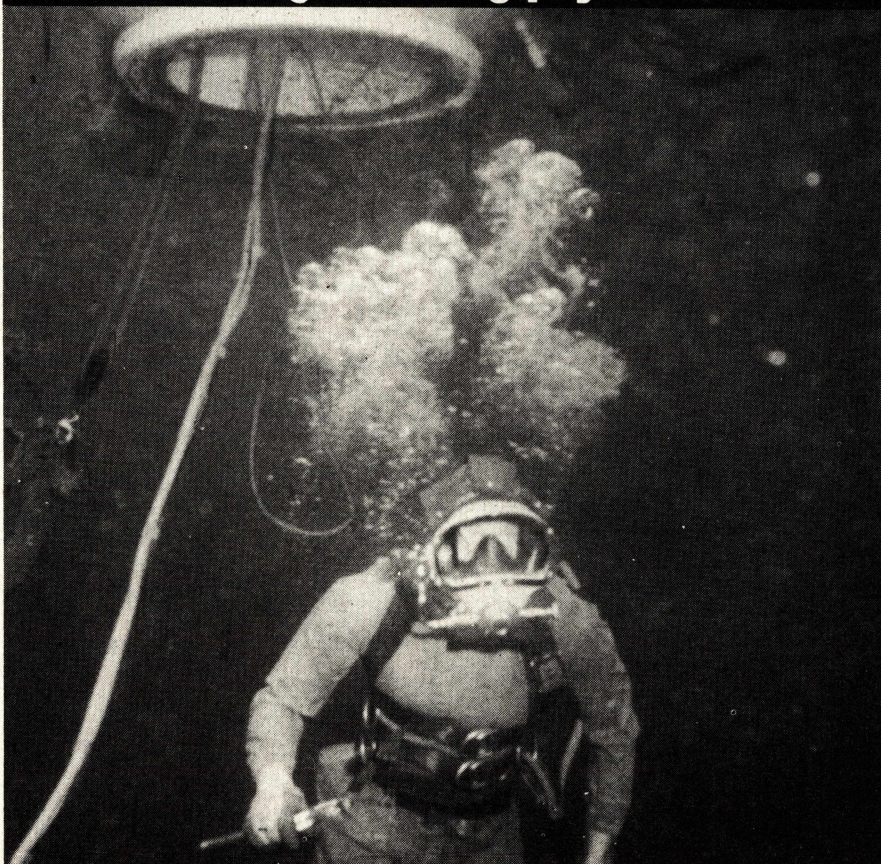
In a continuing effort to assist in the improvement and management of offshore diving accidents and illnesses, the College of Oceaneering has developed a course in Medical Aspects of Diving Accident Management (MADAM).

The course was developed to instruct diving supervisors, diver medical technicians and other personnel responsible for handling diving accidents in the most up-to-date methods of effectively and efficiently handling these problems. The course was designed and is taught by Dick Clarke, a saturation diving supervisor and the diving medicine instructor at the College of Oceaneering.

The program is being offered by the college as a non-profit service to all organizations interested in improving the skills of personnel responsible for handling diving accident management.

The 3-5 day, comprehensive course covers established accident management procedures, reviews specific guidelines as they apply to on-site diving accident management and introduces recent developments and updated procedures in the care of divers involved in accidents or diving related illnesses. ➤

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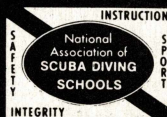
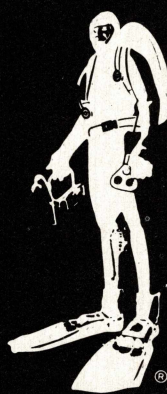
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RX FOR DIVERS BY FRED BOVE, M.D., PH.D.

We visited several diving seminars recently and came back quite impressed at the interest shown by the sport diving community in the scientific and medical aspects of sport diving.

We attended Underwater Canada in March in Toronto. This diving exposition combined many excellent underwater film and slide presentations with seminars in diving medicine, ecology, the marine environment, photography, equipment and even cooking and serving food from the sea. I was impressed with the enthusiasm and interest that those attending expressed in all areas of diving. Keeping abreast of new developments in techniques, equipment and the underwater environment is important not only for more enjoyment but also for better safety. The equipment displayed at the show encompassed the newest developments in sport scuba gear. Going through the display alone can be a full day's effort. Some interesting commercial diving displays were still present from the commercial diving seminar that preceded the sport diving symposium. We rarely see the commercial diving world, so the exhibits provided a brief, but informative look at this aspect of diving.

In May, we attended Our World-Underwater in Chicago. Our World is another diving exposition which attracts a large number of sport divers who attend seminars on topics ranging from aquatic skills to underwater photography. The evening underwater film festival is something everyone should see since it attracts the best of the country's underwater photographers. Movies on reefs, whales and islands abound at the show and all are unique. Our World awards a scholarship to a deserving individual each year that provides funds for travel to diving research laboratories around the world. The proceeds from the show support the scholarship program.

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These and other sport diving expositions are held yearly and are well worth the effort to attend. The entertainment and education provided in one weekend are hard to match anywhere else.

In June we attended the Annual Scientific Meeting of the Undersea Medical Society. The UMS is made up of most of the diving physicians and scientists in the U.S. and in many foreign countries. At this meeting we hear about new research on diving, decompression, marine environment and use of hyperbaric oxygen. I had the pleasure of passing the helm to Dr. Paul Linaweaver, the new president, who is a good friend and colleague. We made a special effort this year to learn about altitude decompression sickness and heard from several Air Force scientists on decompression sickness in aviators. It is well known that both divers and aviators can get decompression sickness. Aviators ascend from one atmosphere to lower pressures, while divers ascend from greater pressure to one ATM. Both can form bubbles in the body by too rapid an ascent and both get decompression sickness.

We also heard from physicians who are using hyperbaric oxygen to treat a variety of medical diseases which until now have been difficult and sometimes impossible to treat successfully. The clinical use of hyperbaric oxygen is one of the beneficial spin-offs of diving research. New hyperbaric chambers are appearing all over the country and many of the physicians who use hyperbaric oxygen began as diving physicians. Our diving community may soon be matched by a community of chamber divers.

Scientific meetings and seminars provide useful, current information to physicians and non-physician diving medical specialties such as nurses, physician assistants and paramedics.

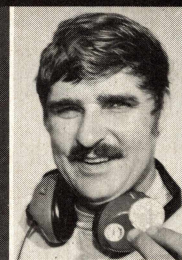
In any year there are many ways to keep up to date on your knowledge of diving and diving safety. One enjoyable way is to combine learning with the entertainment provided by an underwater film festival. You will benefit in many ways by attending a seminar, meeting, festival or exposition on diving. >

LA MER SHARK EXPEDITION

Amos Nachoum of La Mer Diving Safari, New York, will be the leader of a February 7-21 great white shark expedition to Australia. Nachoum will be accompanied by Dr. Eugenie Clark of the University of Maryland. The Australian support team will be led by Rodney Fox.

La Mer's expedition will travel aboard the 65 foot *Nenad*, specially outfitted with three shark cages and protected photo platforms. The *Nenad*'s crew has extensive experience working with the great white. The expedition is limited to five participants. >

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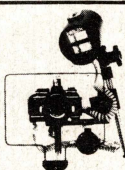
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SEATEC THERMO TEC

A Drysuit For The Serious Diver

BY GEORGE COZENS

excessive buoyancy. The suit vented automatically via the adjustable A.P. (brand name) exhaust valve: Once set, this valve automatically releases any overpressure. We finished the dive in about 10 feet of water. In very shallow water my legs felt a little buoyant—a problem easily remedied by getting upright and venting a little more air from the suit. I made two more dives that day; both were shallower, but longer in duration. Never did I feel cold, nor did I ever feel any moisture inside the

The ThermoTec drysuit, itself, is constructed of durable 420 denier nylon with a heavy urethane coating, making the suit flexible, lightweight and resistant to tearing and abrasion. A double fold quadrastitch (material is folded and sewn with four rows of stitches) is used in the seams, which are then "weld sealed" with a multi-layer polyurethane tape, specially developed by Seatec. The seals at the neck, wrists and ankles are made of flexible but strong latex rubber. These may be trimmed to customize the fit, if desired. Instead of ankle seals, you can get attached latex boots. Entry is provided by a cross-the-shoulder, premium quality, waterproof zipper. Unique features of the suit include: nylon cuffs with individual Velcro® ties at the wrists and ankles, to help protect the latex seals and reduce water entry into external gloves and boots; an elastic waist cord which can be adjusted by the user to tuck in suit material in the lower back area; an extra thickness of nylon material around the knee and lower leg (for increased protection), with their own grommets for draining; and a special design that allows for more freedom of movement.

The ThermoTec drysuit and undergarment are offered in six sizes, from extra small to double extra large, as well as custom sizes. Colors available include solids or combinations of red, yellow, royal and navy blue. The choice of either the A.P. (with automatic exhaust) or White's Water Wear Canada Dri (with manual exhaust) inlet and exhaust valves is also offered.

Maintenance of the ThermoTec system is simple: rinse the suit occasionally in fresh water and dry out of direct sunlight; wash the zipper, when needed, with soap and warm water and lubricate with beeswax; apply a rubber preservative such as Armorall to the latex seals, as desired; wash and drip dry the undergarment—do not apply heat, as in a clothes dryer.



suit. It was great! I had been comfortable all day. Upon de-suiting I found some moisture on the inside of the suit, perhaps condensation or perspiration and I could wring some water out of the underwear sleeves near the wrists. The attached boots, however, were completely dry and, most importantly, I felt dry.

This comfort is owing, in large part, to the jumpsuit-style ThermoTec undergarment, made of polypropylene. Polypropylene doesn't absorb or retain water, so it doesn't mildew and it provides outstanding insulation because it reflects body heat while it wicks moisture away from the body. The garment is completely fleece lined, has hand and foot loops so the arms and legs can't ride up, three fleece lined pockets, and extra padding on the shoulders, knees and rear end.

The basic ThermoTec drysuit system including drysuit, underwear, thermal socks, outside boots, hood and carrying case, retails for \$649. It comes with a three year limited warranty. Considering the increase in diving comfort and enjoyment it can provide, I think it's worth the cost to any serious diver. 



The melodious sounds of a music box awoke me. Then came the voice of Captain Eddie, skipper of the *Golden Doubloon*, telling us it was time to wake up and get our "gears" together. My "gears" still weren't too together when I reached the deck. Gradually, the stupor left me and I started suiting up. Even in my groggy condition the new Seatec ThermoTec drysuit system was easy to don. My buddy and I entered the water and began our descent in hopes of finding a virgin reef. No such luck. We gave up the search at a depth of about 120 feet and started following the sandy bottom upward toward the shore.

Normally, I'm not a deep diver, but this dive gave me the opportunity to check out the new Seatec suit. It performed flawlessly. Near the bottom the thermometer registered 60.8°F and I was very comfortable; no chill and no damp feeling. The buoyancy of the suit and undergarment were offset by a 21 pound weightbelt and a steel 90 cylinder. Neutral buoyancy was maintained by adjusting the air in my BC jacket, while only small amounts of air were admitted to the suit to overcome suit squeeze during descent. During the gradual ascent air was manually vented from the BC to prevent

photos/Bonnie J. Cardone

KING OF THE HILL



The first Wednesday in October is very special for many California divers: It is the opening of lobster season. It is also the biggest single week of dive activity all year-round. Dive stores sponsor contests with prizes for the biggest bug. Charter boats are booked solid with night and day dives opening week and every week-end thereafter in October.

The object of all this attention is officially named *Panulirus interruptus*, the spiny lobster. Unlike its Eastern cousins, *P. in-*

like to see what they look like, visit the Cabrillo Marine Museum in San Pedro: It has two, alive and well in aquariums. One, a 16 pounder, was taken off the Long Beach Breakwater during a night dive. He is estimated to be between 50 and 75 years old and museum officials have found him to be quite shy. The other bug, considered to be an extrovert, weighs 13 pounds. He was found roaming around on the sand in broad daylight off the Palos Verdes Peninsula.

tected, if you can get a hand around this you will usually get the bug. When bagging your catch be sure to put it in your goodie bag tail first, not head first. The creatures swim by flipping their tails and moving backward.

Among bug divers there are always rumors of really big bugs that many have seen but no one has been able to catch. Such a bug is said to exist at both Santa Barbara and Anacapa islands and in the Flat Rock area of Palos Verdes. Each is rumored to weigh at least 16 pounds and is so far back in a cave or rocks that one can see, but not touch, it.

No one knows how long lobster live or how big they grow. John Duffy of California Fish and Game estimates it takes 10-11 years for a bug to reach legal size.

Night diving for lobster is fun and often more rewarding than daytime diving. The animals are nocturnal, thus they come out at night to feed. Hold your dive light in your nongrabbing hand; when you see your quarry, lunge quickly, pinning it to the bottom with a hand placed around the body just behind the head. Set your light down (you'll need one that isn't going to float away) and bag the bug.

Lobster may not be cleaned aboard a boat, they must be brought ashore whole so that Fish and Game wardens can determine their size. Wardens will not only confiscate shorts or headless tails, they will also give you a citation that will probably result in a hefty fine.

Luckily, lobster are pretty hardy. You can keep them alive easily by putting them in a bucket of seawater which you change frequently and keep out of the sun. They will also keep well in gunny sacks that are hosed down regularly with saltwater. By far the best way to keep them alive and feisty is the baitwell of the boat, if there is one.

Cleaning lobster is easy. Simply twist or cut the tail off and remove the intestinal vein. With large lobster you will probably want to remove the meat from the head and boil the legs. These latter are cracked and eaten in the same manner as crab legs. With small bugs this is probably not worth the effort. Although some people prefer to boil their bugs and then freeze them, they can be frozen raw. If you are going to eat your catch the next evening, I have found they will stay alive in the vegetable crisper overnight.

Any lobster recipe can be used although I prefer to steam mine and eat them with melted butter. The fresher the bug, the sweeter it tastes.

There is really a lot more I could tell you about *P. interruptus*—it is a fascinating creature with an interesting life history. I'll bet, however, that you'd rather be getting ready for the lobster dive that will put you in the water at 12:01 am, October 3. Can't make that? How about a beach dive at Shaw's Cove or a boat trip to Clemente? Lobster season closes March 21, 1985. Good diving and, good luck. 🦞

Let's Go Lobster Diving California Style

BY BONNIE J. CARDONE



photo/Bonnie J. Cardone

The wary *Panulirus interruptus* (left) is rarely found out in the open. Proper bug bagging technique is illustrated above.

interruptus has no claws. If you thought that means it is defenseless, think again. The head is full of spines; the antennae and the "horns" at their bases are full of spines; and, the edges of the tail have sharp, sawtoothed projections. If you like your hands in one piece, don't try to grab a spiny lobster when you're not wearing sturdy gloves.

In the early days of diving, lobster were large and plentiful. (There were fewer divers as well.) Old time divers like to talk about pushing eight pounders out of the way so they could grab the even larger bugs behind them. Jim Stewart, diving officer of Scripps Institution of Oceanography since 1960, caught a 26 pounder in 1948. A member of the Bottom Scratchers dive club, he also caught two 22 pounders in those early years.

Today, an eight pound bug is not only a very respectable catch but also a rarity. From my own observations, I would guess that most of the bugs taken are between three and four pounds in weight and just a little over legal length. The big bugs are still out there, however. If you'd

A California Fish and Game biologist told me that the annual lobster catch has been increasing for the last four years. I suspect, however, that the number caught by each individual is down, simply because there are so many more divers sharing the catch.

In order to take lobster in California you must have a fishing license and you must take with you, underwater, a device capable of measuring the animal accurately. A legal bug is one which measures three and one-quarter inches in a straight line from the rear edge of the eye socket to the rear edge of the body shell. The bag limit is seven per day. Lobster may be brought to the surface to be measured but must be returned to the water immediately if short. You may use only your hands or baited hoop nets to take lobster—no spears and no mechanical grabbing devices are allowed.

P. interruptus likes rocky areas. Although its northern range is usually regarded as Point Conception, a few have been taken off Cayucos, just northwest of Morro Bay. The hardest part of lobstering is finding a legal sized bug: Shorts seem to be abundant. Of course, they are also the friendliest; once bugs become legal size they become wary, especially if they see a lot of divers. Thus, the best lobstering areas are dived the least.

Just how do you grab a lobster? Very carefully! Forget about grabbing antennae or legs unless that's all of the lobster you wish to take. These items will come off in your hands. The bases of the antennae, called the horns, are the best places to grab. If you can get both horns with both hands, your chances of success are almost guaranteed. Most bugs move back into their dens and try to wedge themselves in. The spines on their bodies facilitate this. If you alternately push and pull on the horns and have patience, you will usually either overpower or confuse the bug so you can pull it out. Although a bug usually keeps its tail section pro-

DACOR'S LE47 STINGRAY

Adjustable Balance Grip For
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The LE47 measures 63 inches and has an adjustable balance grip. The eight inch long butt extension (above) serves as a balance chamber or storage slot for extra spear tips. The speargun is powered by three medium weight rubber bands.

TEXT AND PHOTOGRAPHY BY FRED FISCHER

If your spearfishing takes you out into the open waters, or you just cannot get the range you would like out of your present compact speargun, then the Dacor LE47 Stingray speargun is worthy of your consideration. This 63 inch three bander is the longest of the Stingray series. In addition to the hollow tube construction, stainless twin barbed tip and 47 inch shaft, a balance grip is provided next to the trigger grip for aiming stability.

In order to evaluate the LE47 completely I began with a close examination of its components and then took it diving.

The muzzle is separated from the grip by a one and one-eighth inch hollow aluminum tube, plugged at each end with an O-ring seal to provide a buoyancy chamber. What Dacor terms a "balance chamber" extends eight inches behind the trigger grip. Weights can be inserted into the chamber to change the balance of the gun or spare tips can be stored there. A wide, molded rubber butt cap fits over the end. I found it distributed the pressure nicely when cocking the gun.

The molded plastic muzzle is a closed design requiring the shaft to be inserted

through the opening. Space is provided for up to three bands which are included. Deflectors to align the bands with the shaft are not present and did not seem to be necessary for accuracy with the LE47. A 14 foot, braided nylon shock cord with a rubber stretch section runs close to the barrel between the muzzle and trigger grip. The 3/8 inch cadmium plated steel shaft is threaded to accept six mm tips.

Left and right handed spearfishermen will appreciate the aluminum grip. The safety, which passes from side to side through the handle, can be actuated by the thumb and index finger of either hand. A small sticker serves to remind you to "push safety on." The shock cord release is forward of the trigger to minimize entanglement. The stainless trigger components respond well to a squeeze shot.

The molded plastic balance grip clamps to the barrel. The position can be adjusted for the length of the diver's arms and preferred shooting posture.

While diving with the LE47 Stingray in limited visibility water I was able to hit targets accurately near the extension limit of the shock cord. The concept of pulling

three medium weight 7/16 inch bands rather than two heavy weight bands made a lot of sense. I enjoyed using the balance grip. It definitely improved the maneuverability of such a long gun. The prime location varied, depending on whether I was shooting from the hip or in a prone position. I had some difficulty remembering to dress the shock cord to one side or the other of the grip to prevent entanglement. Prefires were not a problem, even when the gun was knocked against rocks.

Stingray spearguns carry a one year warranty against manufacturing defects. It is recommended that the LE47 be thoroughly rinsed with fresh water and dried before storage. A good selection of spare parts, tips and accessories is available.

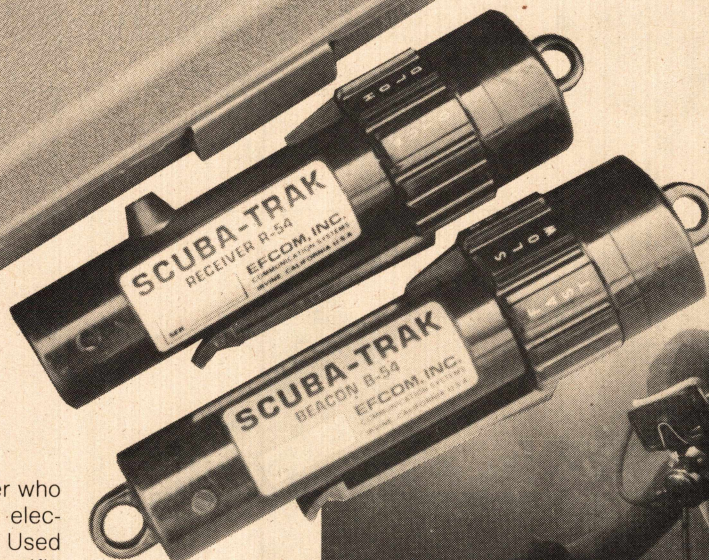
In conclusion, I found the Dacor LE47 Stingray speargun to be ideal for the diver looking for an economical big gun. The increased range (over the popular short guns) may make the difference in landing more cautious species of fish. For additional information see your Dacor dealer. The suggested retail price of the LE47 is approximately \$115.

Scuba Trak

Efcom's U/W Locating System



photo/Ernie J. Cadore



photo/Eric Hanauer

The Scuba Trak underwater locating system consists of a marker beacon and receiver, each about the size of a small flashlight.

BY ERIC HANAUER

Ever wonder what to get the diver who has everything? How about an electronic underwater homing device? Used successfully by commercial, scientific and military divers, a modified unit is about to be introduced into the sport market. Although a bit pricey for the average diver, the Scuba Trak could be just the ticket for wreck divers or others who need to relocate a specific spot.

The Scuba Trak underwater locating system consists of two components, each about the size of a small flashlight: a marker beacon and a receiver. The beacon is placed on a reef or wreck. When turned on it emits a sonic pulse every second and will continue to do so up to 16 weeks on the power provided by a nine volt battery. The receiver, carried by a diver, will pick up the sonic beacon at a range up to 1,000 feet (a conservative estimate) under ideal conditions. As long as it is on the beam, the unit flashes a bright red LED every time a pulse is received. Staying on beam, the diver is guided directly to the transmitter.

The Scuba Trak can be used for locating and tracking other divers, marking specific reefs or wrecks, search and recovery, and finding the way back to a boat. It would be especially valuable at night or in limited visibility.

Although the product is new to the sport diving market, it has been available to commercial, military and scientific divers for nearly three years. Produced and marketed by Scuba-tech, Int., Corp., an affiliate of Efcom Communications Systems of Santa Ana, California, the professional version is called the Mark-Trak system. Efcom specializes in wireless underwater communications and tracking

systems and has established a strong reputation in the commercial field. We tested the Mark-Trak version, but the Scuba Trak will be identical in terms of range and performance, for \$200 less. The price break was achieved by deleting a manual mode of operation on the receiver. The sport diving version has only an automatic mode and will flash at one or two pulses per second lasting 16 weeks and eight weeks, respectively.

A sonic beam travels on line of sight, so the beacon should be placed about five feet above the object it is marking. With a line attached to molded rings on each end of the unit, it can be fastened to a weight or to the object at one end, and a small float attached to the other. That way, the beacon stands upright and clear of the bottom while sending out its signal.

With the receiver set in the automatic mode, the diver makes a 360 degree scan until he or she perceives a regular flashing of the LED. Initially, it accepts the signal at a 60 degree aperture. Scanning now to find the center of the beam, the diver points the unit at the signal from 20-30 seconds. During that time, the aperture automatically narrows to 10 degrees. The diver then merely follows the beam to the target. If the signal is lost, repeat the

scanning procedure to get back on the beam again.

In testing the Scuba Trak we experienced the same disorientation as when first using a compass. The secret is to trust the device and distrust your senses.

A major limitation of the Scuba Trak would be in a kelp bed. The kelp reflects the beacon signal so the receiving unit flashes erratically over about a 180 degree beam. The device works best in an area clear of obstructions, so the higher it is mounted above the bottom the better. When hanging from a ship on the surface, the reverse holds true. Hang it at least six feet down, because the surface can reflect sonic impulses.

The Mark-Trak was tested extensively by the Navy Experimental Diving Unit and found to be sound and reliable, requiring little diver training before use. Human engineering aspects were good and no material failures occurred during the test. Since the Scuba Trak is the same unit but a bit less complicated, it should provide the same sort of reliability for sport divers. The proposed retail price is \$395. For further information contact Scuba-tech, Int., Corp., 1540 S. Lyon Street, Santa Ana, California 92705; (714) 543-0785. 



RANGER I

BG Watersports' One Piece Full Body Wetsuit For Style, Durability And Comfort

BY MARTY SNYDERMAN



photos/Bonnie J. Cardone

As far as diver comfort is concerned, your wetsuit is the key to your system. No matter how much you love your mask and how easy breathing your regulator is, diving is really fun only when you are warm and comfortable both in and out of the water. Because of that, it makes a lot of sense to pay close attention to the fit and feel of your wetsuit. You should also consider style, convenience, the technology employed and price.

Keeping those factors in mind, the line of Ranger I wetsuits produced by B.G. Watersports is well worth a careful look. The Ranger I is a one piece, full body suit which comes in thicknesses of 1/4 and 1/8 inch. Both models are built from chemically blown neoprene rubber made by Yamomatta in Japan. Present day chemically blown rubber is much more flexible and stretchier than in years past and the neoprene utilized in the Ranger line is certainly no exception. The rubber is soft, yet holds up very well in compression tests.

The 1/8 inch version of the Ranger I is best suited for tropical water while the 1/4 inch model is designed for temperate seas. The 1/4 inch suit is ideal for active freedivers. If you are a skin diver, you will not have to carry as much weight as you would with a farmer john, nor are you as likely to become overheated. For underwater photographers in cooler areas, the Ranger II (farmer john series) is likely to be a wiser choice.

In making a wetsuit that is both durable and comfortable, the rubber backing is just as important as the rubber itself. The rubber on Ranger suits is backed on both sides by a layer of shiny nylon. The nylon has good stretching characteristics both with and across the grain. Randy Meistrell, the general manager at B.G. Watersports, told me the staff is especially proud of the fact that the nylon used has superb laminating qualities. That means the rubber and the nylon resist separation or delamination. Taken one step farther it assures the user of a longer lasting suit.

Flexibility is an integral part of wetsuit comfort and warmth. I found the Ranger I to be very flexible, making it easy to doff

and don. And, when in the water, a stretchy suit conforms better to body contours, reducing water flow within it.

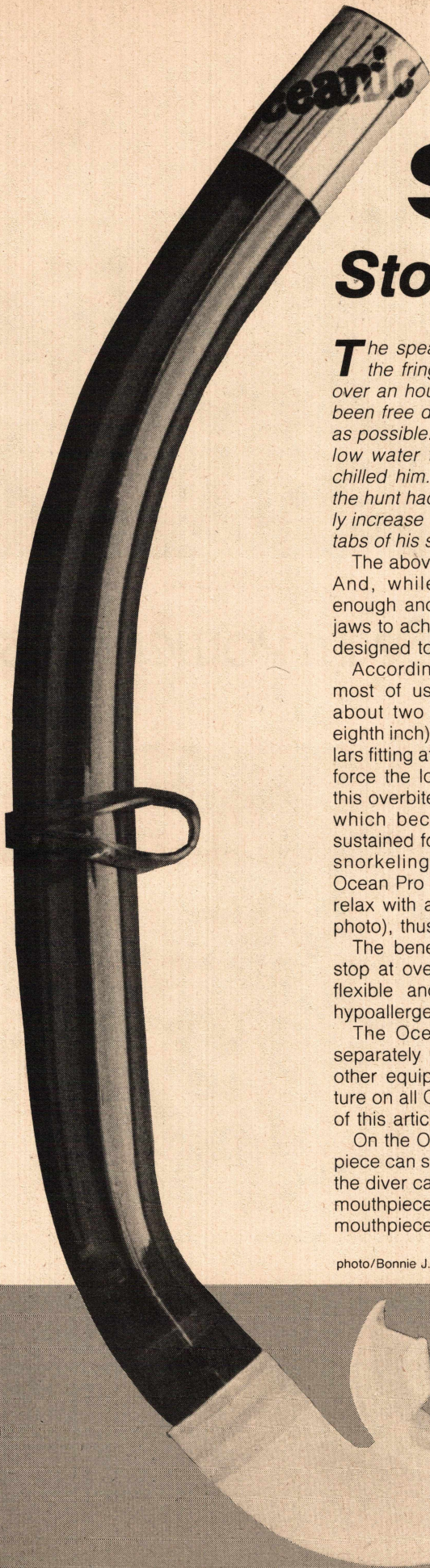
One of the outstanding features of the Ranger I is the seam construction. All seams are both glued and blind-stitched. Blind stitching means that the seams are sewn on both sides of the suit, but no stitch penetrates the entire width of the rubber. This adds strength but does not create leaks.

The diamond crotch construction utilized in the Ranger I also adds durability as the seams do not join at just one point. Stress is spread out along the seams.

Ranger suits come standard with a Delrin back zipper made by YKK. Delrin is a highly corrosion resistant nylon compound. The zippers are self-lubricating and the teeth do not absorb water, greatly reducing the possibility of jamming.

Available in either a royal blue or black with silver stripes, the one piece Ranger I wetsuits are stylishly handsome. They are available in nine men's sizes and four women's sizes. They come without knee pads or hoods, but both can be added if you desire.

If you are in need of a new suit for tropical, semi-tropical or temperate water diving, consider a Ranger I. For the features offered, the suggested retail price of \$216 is a good deal. For further information contact: B.G. Watersports, 530 6th Street, Hermosa Beach, CA 90254; (213) 374-4074.



ocean pro snorkel

Stops jaw fatigue!

BY JIM WALKER

The spearfisherman had been out on the fringes of the deep kelp bed for over an hour. Stalking yellowtail, he had been free diving, trying to be as stealthy as possible. In spite of his full wetsuit, the low water temperature had thoroughly chilled him. The chill and the tension of the hunt had caused the diver to gradually increase the pressure of his bite on the tabs of his snorkel until his jaws ached....

The above scenario is all too common. And, while biting on anything hard enough and long enough will cause the jaws to ache, Oceanic has a mouthpiece designed to reduce the problem.

According to the Oceanic literature, most of us have a natural overbite of about two millimeters (less than one-eighth inch) with our upper and lower molars fitting at rest. Traditional mouthpieces force the lower jaw forward, eliminating this overbite and causing a misalignment which becomes uncomfortable when sustained for long periods such as when snorkeling and diving. The patented Ocean Pro Mouthpiece allows the jaw to relax with a two millimeter overbite (see photo), thus reducing jaw fatigue.

The benefits of the mouthpiece don't stop at overbite. It is also ultra-soft and flexible and available in neoprene or in hypoallergenic silicone rubber.

The Ocean Pro Mouthpiece is sold separately for the Omega regulator and other equipment, but is a standard feature on all Ocean Pro Snorkels, the focus of this article.

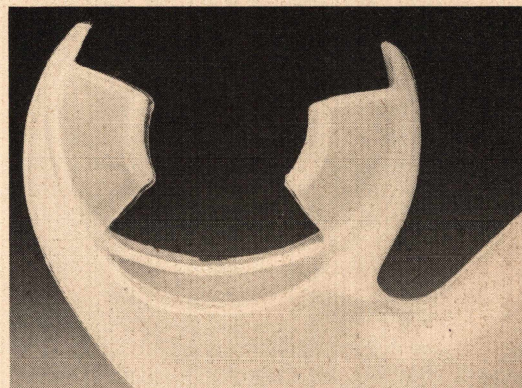
On the Ocean Pro Snorkel, the mouthpiece can swivel 360 degrees. In this way the diver can adjust the fit of the snorkel/mouthpiece for individual comfort. The mouthpiece is secured to the barrel by a

leakproof, double ridge/groove.

The barrel of the Ocean Pro Snorkel has a large bore (over three-fourths inch in diameter) which makes for easy breathing. It has a built-in curve which streamlines its positioning. The barrel is made of a sturdy, yet flexible polyurethane. It can be twisted and bent double and still spring back into perfect shape. The barrel is available in translucent blue, orange or gray. Its color coordinates perfectly with the Oceanic Prismatic masks as well as other gear. The snorkel keeper matches the barrel.

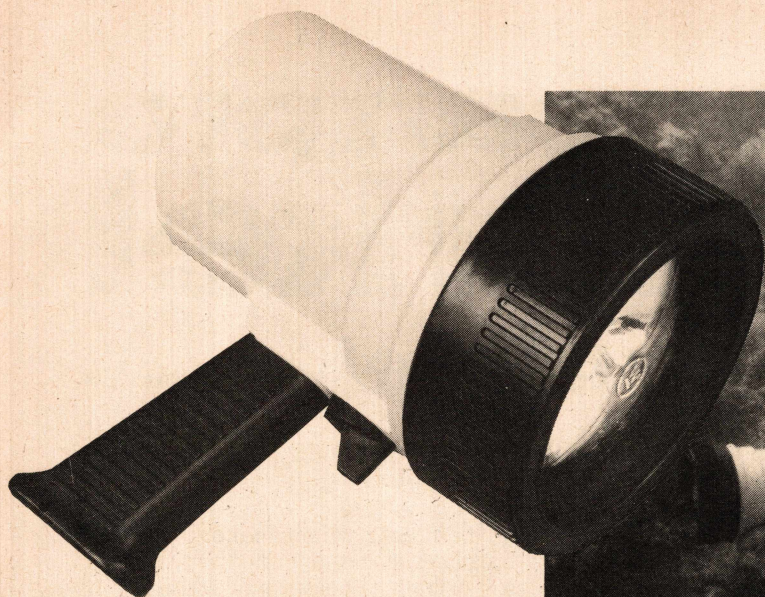
On my dives with the Ocean Pro Snorkel I found it easy breathing, easy to clear and easy to adjust for fit. The variety of positions possible owing to the swivel mouthpiece allowed me to keep the tip of the barrel above water at all times, even in the full face down position. I never experienced any jaw fatigue and the mouthpiece rested comfortably.

The Ocean Pro Snorkel retails for \$17 at Oceanic dealers. The Ocean Pro Mouthpiece alone is \$10.50.



photo/Bonnie J. Cardone

The Ocean Pro Snorkel combines a flexible, translucent barrel with a swivel mouthpiece which comes in silicone or neoprene rubber. When the snorkel is placed on the left side of the diver's head, the mouthpiece is designed to accommodate a two millimeter overbite (see photo above) and thus reduce jaw fatigue.



Aqua-Lung Ocean Light

A Wide Beam Power House

TEXT AND PHOTOGRAPHY BY BONNIE J. CARDONE

Divers can be quite opinionated when it comes to equipment—in fact, you'll rarely find one who lacks very definite ideas on what's good and what's not. This is very true when it comes to dive lights. There are those who passionately believe a dive light should be small. And, of course, there are those who wouldn't consider using anything but a big, wide beam power house. If you're one of the latter, you should consider the purchase of an Aqua-Lung Ocean Light.

The Ocean Light power source is a six volt electrogel battery. I asked U.S. Divers why they chose to use this sort of battery rather than ni-cads. According to a company spokesman, rechargeable ni-cads produce a bright light, but one of their drawbacks is that the initial intensity tends to drop-off noticeably after an hour or so of use. Another drawback is that there is almost no warning when the charge is wearing off: The light suddenly dims and then goes off. With the gel cell battery used in the Ocean Light, the intensity of the light lessens more slowly. Such a battery, fully charged, produces about two hours of light.

The light source for the Ocean Light is a sealed beam lamp (GE/Westinghouse 4547): It has a life of about 80 hours.

Of course, the amount of light and the angle of the beam are only part of the story. Before you buy a dive light you must decide whether you want one that's negatively or positively buoyant. If you're going to hold it all the time, this probably



The Ocean Light utilizes a wide beam lamp powered by a rechargeable six volt gel cell.

doesn't matter. However, if you plan to set your light down and expect it to stay in place while you take a picture or grab a lobster, you'll want it to be negatively buoyant, as is the Ocean Light.

A charger comes with the Ocean Light and charging is easy. You simply disassemble the light and remove the battery. There is a little trick to this. Turn the light so the battery end is in the air and tap the opposite end lightly against a solid surface. The battery should fall out. If it

doesn't, tap a little harder. Then, plug one end of the charger into an electrical (110 v) outlet, the other into the battery. A full charge takes 18 hours. Avoid overcharging as this could result in permanent damage. After charging, reassemble the light (the Owner's Manual that comes with it contains illustrations and detailed instructions), clean the two O-rings and lightly lubricate them with silicone grease.

The Aqua-Lung Ocean Light sells for about \$110 at local dive stores. 

SDM travel SECTION

I like small islands: Places that are far away and have little feel of metropolitan life. I crave peerless diving: Precipitous walls, acres of living corals, friendly fish, tiny macro organisms and thrilling large marine animals. I relish gourmet meals served near the water: Dishes that are carefully crafted to be both delightful to palatal senses and entreating to the eye. I need a serene place to rest: One that offers a view that reassures me I am in the tropics. I love long, ribbony beaches: Sandy, mile-long stretches that make it difficult to find evidences of other inhabitants—beaches where I can find time to empty my mind or compose my thoughts. I like to look for retreats like the one that brings these thoughts to mind: Provo's Third Turtle Inn.

A part of the tiny nation of the Turks and Caicos Islands, just north of the Dominican Republic, Providenciales is the show-place of its country. Gently rolling hills faced by long winding beaches, some backed by rugged ironshore boulders, face the open Atlantic. Tall cactus and rough scrub brush cover its terrain.

In the northern center of Provo's half-moon shaped beach, the Third Turtle Inn is stair-stepped into the cavern pocked iron shore. In Turtle Cove, the property is vividly visible from the water with its thousands of purple hued flowers tightly planted on a rugged cliff face. Walkways and trellises meander up the precipice and down to the water. In the morning, the bay sparkles and shimmers, reflecting the images of the dozen or so large sailboats and yachts that occasionally make this their port-of-call.

A small inn that does not attempt to attract large crowds, the Third Turtle is far above average in many of the



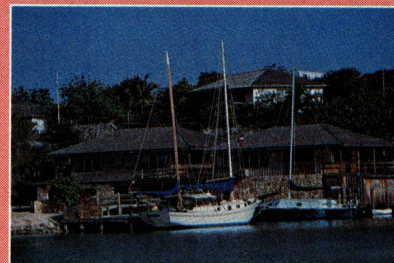
PROVO'S THIRD TURTLE INN Scuba Delight in the Turks and Caicos

TEXT AND PHOTOGRAPHY
BY STEVE LUCAS

amenities it offers. Rarely does one encounter technically trained chefs at resorts this remote and of this size. The cuisine at the Third Turtle is more than deserving of the all too frequently used term, gourmet. Chef Jack Whalley, who has impeccable credentials in this fine art, carefully crafts each meal. Properly prepared salads, delicate sauces and perfectly garnished entrees of poultry, fish, lamb and beef are featured in the evenings. The choices should satisfy the most demanding culinary tastes. They are var-

ied enough to make it difficult to sample all and each is beautiful to the eye and appealing to the senses. Open air service of breakfast and noon meals, as well as the sharing of adventures over a tropical drink, are the fare on the adjacent veranda.

A short distance from the inn, a lengthy stretch of near deserted beach



winds its way west. In the evening you and a friend can run into a setting sun with only the sounds of wind, sea and yourselves. It is unlikely you will encounter more than a person or two in an hour's wandering. Near the beach are two private, fenced tennis courts where what few frustrations you may be able to retain after a day on such an island can be vented against a fast moving ball. Directly off the beach, lively corals can be leisurely snorkeled over. Further offshore, the deeper reefs provide diving that can challenge that of most any resort island in the Caribbean.

Managed by Gale and Ann Anspach, formerly of Cayman Kai on Grand Cayman, the inn is operated as an island resort for vacationers, yachtsmen and divers. Utilizing open-fisherman boats, the dive center is equipped to give better than average personal attention to either individuals

travel

or groups. Schedules are oriented to the guests rather than to the inn. Dive-master/instructor Steve Small is a true professional underwater photographer. He graduated from and served as an instructor of underwater photography at the prestigious Brooks Institute in Santa Barbara, California. His expertise in teaching the basics to



advanced aspects of this popular pastime make Third Turtle an ideal location for either first time or advanced underwater photo enthusiasts.

The diversity of dive locations, combined with the potential opportunity to swim with the large animals that inhabit the open Atlantic makes for varied diving. At Northwest point, a 40 minute run inside the reef from Turtle Cove, the wall begins in just more than 30 feet and descends as sharply as any in the Caribbean. Its rim is overgrown with sponges and at places is carpeted with brightly tinted, feathery crinoids. Down its face large, purple, tubular sponges extend six feet and more off the wall to strain nutrients from the clear blue waters. Steve has experienced several encounters with dolphin pods at this point. He has frequently heard the underwater call of migrating whales as they circle the island during the early portion of each year. Others have reported swimming with manta and squadrons of eagle rays as they cruise the depths in their quest for food.

Directly offshore, jungles of elkhorn corals protect the island from storm

surges and make excellent thickets for shallow exploration. Beyond the elkhorn ridges, long spines of densely packed small corals alternate with wide rivulets of sand. The coralline mounds wander toward ever deeper water and are inhabited by uncountable numbers of large and small tropicals. Spires of pillar corals dot the mounds like underwater cathedrals reaching for the surface.

With great regularity, large southern rays fly across the sandy arenas and dive beneath their surfaces. Large, searching, bulbous eyes protrude out of the crystalline cover of sugary sand and scan the area for prey or antagonists. Approaching divers are allowed to come within inches before the panicked behemoths flee, leaving only a thick cloud of sand.

Near Grace Bay, Nassau grouper rush to meet Steve as he descends with food box in hand. They have become accustomed to hand feeding and rub against any outstretched hand as though insisting their backs be scratched. A brave queen triggerfish joins in the feeding and has been known to nip the ears of divers when

food is not abundant!

Halfway between Northwest Point and Turtle Cove, the shallows of Wheel and Cut break through the thick, shallow reef. The area offers one of the most exciting dives found in the Turks and Caicos. In only 20 feet, Steve takes experienced divers and photographers to watch a school of three and four foot blacktipped sharks feed. A speared snapper placed in the sand as bait, the divers hide with their backs against large stands of elkhorn corals. With near guaranteed success, one to a dozen small sharks suddenly flash out of the distance and devour the bait. Cameras must be at the ready, because, as in my case, the entire show may last less than 60 seconds. But what a minute to tell of over and over again.

Only minutes away from a newly paved commercial jetport, Third Turtle Inn and Provo are easily reached from Miami or Fort Lauderdale. Cayman Airways now makes three flights each week to the island from Miami. Their inflight service is excellent and, as with their flights to the Caymans, the personnel know how to take care of the traveling diver.

An ideal resort for divers with non-diving spouses, the Third Turtle is a perfect get-away for vacationers who do not need a lot more than a quiet beach, excellent cuisine, beautiful sunrises and sunsets, a little tennis and some superb diving—exactly my kind of place.

Third Turtle Inn reservations can be made in the U.S. by contacting Marie-Pierre Griffin, Hotel Plans, Inc., 1200 Harbour Road, Oakbrook, IL 60521; (800) 323-7600. 

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BRAC REEF RESORT

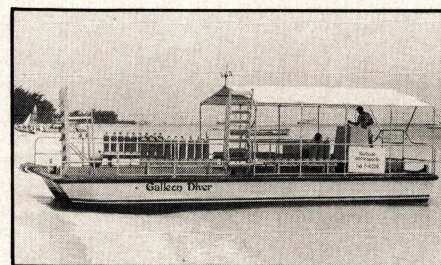
The Brac Reef Beach Resort is one-quarter mile west of the old Brac Reef Hotel on Cayman Brac. It offers rooms that are air conditioned and have ceiling fans. Adjacent to the hotel is a pool and tennis courts, and a bar opens out onto the poolside area. Each room has a TV for satellite reception of U.S. programs.

The beach area encompasses virtually all watersports activities and guests will be able to rent day sailers, Hobie Cats, sailboards and jet skis. Thatched cabanas, complete with hammocks, enhance the beauty of the beach area.

In addition to a restaurant, the Brac Reef has a 40 seat conference room, fully equipped for A/V presentations.

CAYMAN DIVE BOAT

Surfside Watersports has launched a new dive boat, *Galleon Diver*. The 38 foot, tri-hulled vessel will be one of the largest dive boats operating in Cayman waters. It has been designed to be a multipurpose pleasure craft accommodating



20 divers with space to spare or non-divers who can observe the action through the boat's glass bottom.

Galleon Diver, powered by two 145 hp Isuzu diesel engines, has a top speed of around 25 knots. Six powerful quartz halogen spotlights facilitate night diving.

Surfside also has day sailers, surfboards, catamarans and jet skis for hire on Seven Mile Beach at Le Club Cayman Resort Hotel.

BONAIRE CASINO

Divi Hotels Corporation has opened its first casino at Flamingo Beach Hotel on Bonaire. An old, refurbished mansion, a historic landmark on the island of Bonaire, is the site of the new casino. In addition to 50 slot machines, three black jack tables, poker tables, a big-6 wheel and roulette tables, the casino will include many other attractive features.

Ron von Kaenel has been appointed director of operations at the Flamingo Beach Hotel Casino.

DOLPHIN DIVES

Captain Slate's Atlantis Dive Center in Key Largo, Florida is now offering snorkeling experiences with dolphins. Other offerings include scuba and glass bottom boat charters and scuba instruction.

FRINK/PHILIPPINES

Stephen Frink, in conjunction with See & Sea Travel, will be chartering the M/V *Tristar* to cruise the Philippines May 4-19. While the 110 foot *Tristar* is able to



accommodate 24 divers in air-conditioned comfort, the Frink MFT Photo-Tour will be limited to 18 to maximize personal convenience.

The unlimited diving tour includes ten days of boat diving, tanks, meals, etc., as well as a tour of Manila with first class hotel accommodations. ❧

BLACKBEARD'S CRUISES

Blackbeard's Cruises will be operating two special trips this winter. January 19-28 and February 9-17 they will be sailing from Miami for nine days of diving and exploring the Berries, Andros and Nassau-South Ocean Beach areas of the Bahamas. The itinerary may vary according to weather. ❧

DESTINATION HAWAII

Aloha Dive Shop, in Honolulu, Hawaii has undergone a renovation and expansion. Still in Koko Marina Shopping Center, the store has nearly doubled in size and has been constructed exclusively of Hawaiian koa wood. Koa is a rare commodity, indigenous to Hawaii.

Aloha Dive Shop offers daily tours on a 30 foot custom dive boat and an 18 foot Boston Whaler. The shop specializes in private and semi-private resort courses. Its full time staff of eight provides personal service to each customer. ❧

ADVENTURE DIVERS

Adventure Divers has opened a new full service facility serving the Miami and Fort Lauderdale areas. The new store will offer equipment sales, instruction on all certification levels, equipment rentals, air fills and trips aboard the *Adventurer* to a variety of dive sites. ❧

ALM TO HAITI

ALM has begun twice weekly service from Miami, non-stop to Port Au Prince, Haiti in addition to its daily 2:00 pm flights to Aruba, Bonaire and Curacao.

The flights are scheduled on Wednesdays and Fridays, with a departure time of 5:15 pm from Miami, continuing to Port Au Prince and Curacao. Northbound flights—Curacao, Port Au Prince, Miami—are scheduled for the same days. ❧

Cayman

Islands

SKIN DIVER magazine calls the Cayman Islands "The Mt. Everest of diving adventure — now the most popular island diving destination in the world." And it makes no difference whether you are an experienced diver, or getting your first check-out in open water.

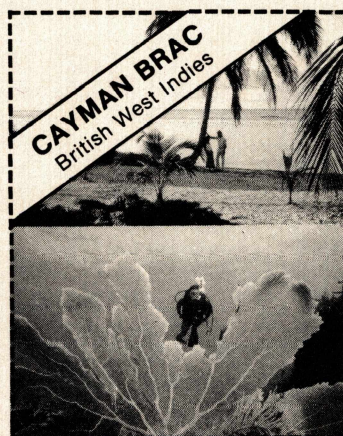
The drop-offs are awesome. And so is the wall diving. But you can also walk off Seven Mile beach and submerge in a fairyland of coral trees, exotic flowers and teeming marine life, a few yards from shore.

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Flamingo Beach Fantasy

BY BARBARA A. CURRIE

With a logbook that begins with a first dive in Grand Turk and spans a spectrum of dive sites, acquaintances were mystified when they learned none of my bottom time had been spent off Bonaire. That tiny Dutch island has had a hypnotic grip on many divers during recent years but I wasn't one of them.

It wasn't that I took their vivid descriptions of that desert island's diving with a grain of salt or that I couldn't begin to pronounce the capital of Kralendijk correctly. Fate had dictated my diving and that island 1,200 miles south of Miami had eluded all itineraries.

This diver's logbook deficiency was corrected very quickly when friend Peter Hughes found out. Of the Hughes network of quality Caribbean dive opera-

tions, Dive Bonaire and the Flamingo Beach Resort remained the missing element in my underwater experiences until Peter put me on an ALM flight, ready to discover that Bonaire bonanza of excellent diving and superlative services.

I wasn't disappointed—in fact, I became an instant disciple. From the moment I was greeted by Flamingo Beach manager Paul Maduro and assistant manager Dave Feinberg, I felt more like a celebrity than a guest—a comment echoed by others staying at the 110 room resort on Bonaire's west coast.

The elusive combination of a well-run resort with personality; an efficient and complete dive operation and superior and varied diving immediately offshore is every serious diver's dream. It's all there

in the professional, symbiotic arrangement between Dive Bonaire and the Flamingo Beach Hotel.

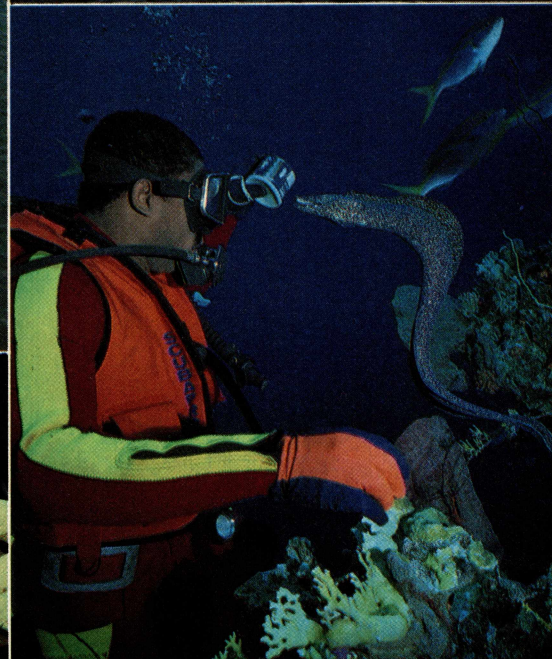
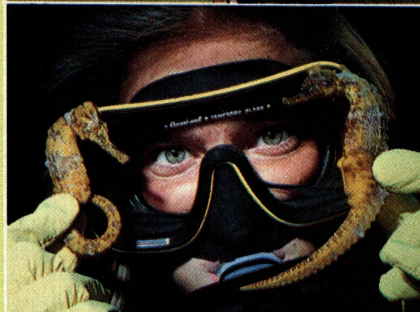
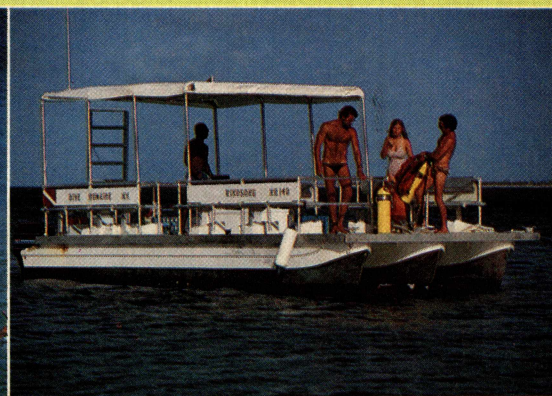
Flamingo Beach is surrounded by a tropical garden, unexpected on an arid island, complete with cascades of bougainvillea and other flowers shaded by coconut palms. The hotel occupies a substantial section of real estate and is a well-planned facility that makes the most use of its space. This is no rustic dive lodge, but a fine property which pleases non-divers as well as aquatic addicts. Spanish-style motif, red-tiled roofs and stucco walls make it a particularly attractive resort.

Its 110 guest rooms are grouped in small two story buildings that form the perimeter of the complex. Within it is an im-

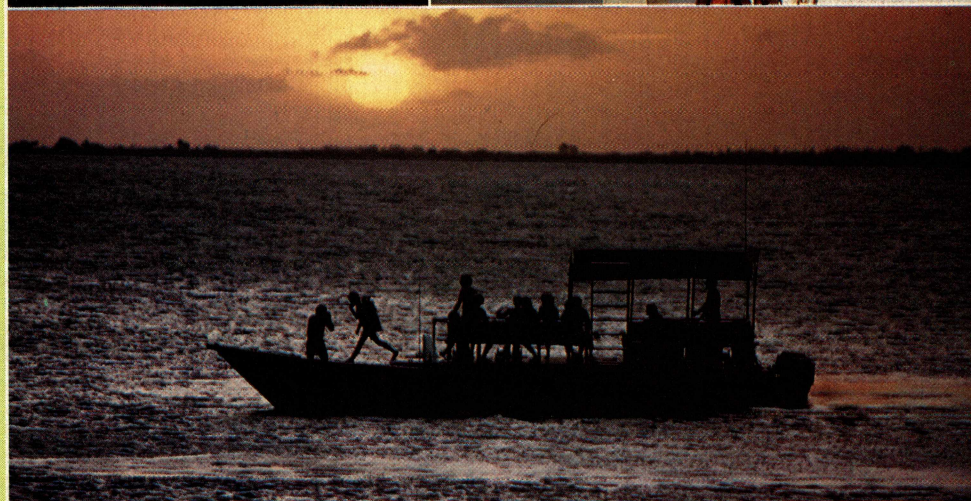
Discover Bonaire and the most charming hotel in the Caribbean

photos/Geri Murphy

The Flamingo Beach Hotel is a well planned facility with a Spanish-style motif. Facilities include 110 guest rooms grouped in small, two story buildings and a large freshwater swimming pool. Photos at right, clockwise from top: Divers utilize a Flamingo Beach pier. The *Windsong*, one of Dive Bonaire's six boats. Divemaster Jeremy with an eel. Chris and Donna McLaughlin. Divers at sunset off Flamingo Beach. Sign-in board for the dive boat *Solar Rainbow*. Seahorses at Jerry's Jam.



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pressive variety of facilities, including two restaurants, a freshwater swimming pool, conference room, open air bar, ice cream and fresh fruit concession, boutique, dive center and underwater photo center. And, all guest rooms are air-conditioned.

Paved sidewalks crisscross the garden-like grounds, providing a picturesque pathway for guests to stroll.

Flamingo Beach rests on the ocean's edge and oceanfront rooms have balconies which actually overlook coral formations below. Three piers stretch out from the resort, providing easy access to reefs and sea for swimmers and snorkelers.

The resort is the creation of Wally Wiggins, an Ithaca, NY attorney whose Divi-Divi properties in Aruba, Bonaire and Cayman Brac, are recognized as some of the Caribbean's best small resorts.

But the personality of Flamingo Beach is maintained through the diligence of manager Paul Maduro, a native of Bonaire whose lengthy experience in hotel management in the ABC islands ensures a well-run resort with attention to detail—such as fresh flowers in the room and personalized welcome-back cards for repeat customers. The little touches so many resorts dismiss as unimportant add to Flamingo Beach's charm.

It was a surprise when I discovered Dave Feinberg was a part of the Bonaire package. I had known Dave, a PADI instructor and veteran hotelier, when we shared an unforgettable few years on South Caicos, where he was manager of the Admiral's Arms Inn. I was delighted to see he found a Caribbean property which deserved his enthusiasm and lured him back from Tahiti.

It could be hard to relax at Flamingo Beach—there's always something scheduled, from happy hour crab races to twilight cruises on the 60 foot gaff-rigged ketch *Mi Duhsi* (my sweetheart). And, dining on the premises offers unexpected quality and variety.

For seaside elegance, the Chibi Chibi restaurant specializes in seafood and nightly *table d'hôte* menu attractions with a continental flair. The more informal Calabas Terrace is open for buffet-style breakfast, lunch and dinner. There are four specialty nights, including an Indonesia Buffet on Tuesday and an Antillean Buffet and Folklore Show on Thursday—excellent values for guests.

The facilities at Flamingo Beach and the fascinating terrestrial attractions of Bonaire might tempt you to stay ashore. But that would be blasphemy—what's west is considered some of the best diving in the Caribbean, especially for photography freaks and macro maniacs. It took only two dives for me to realize what mesmerizes divers on this tiny desert isle.

Entre' into this underwater kingdom is through Peter Hughes' Dive Bonaire facil-

ities, designed and built by Peter and Alice, and one of the best organized facilities in the Caribbean.

Dive Bonaire has a fleet of six dive boats and an inventory of 170 tanks. Despite the volume of divers who pass through the dive center doors each year, this operation runs with the efficiency expected from professionals. Each guest is given a number at check-in which identifies his/her tank, mesh storage bag and location in the storage area. Guests sign up by simply writing their numbers beneath the dive boat and dive site they wish to visit for the next day's diving; tanks are delivered to that boat for them.

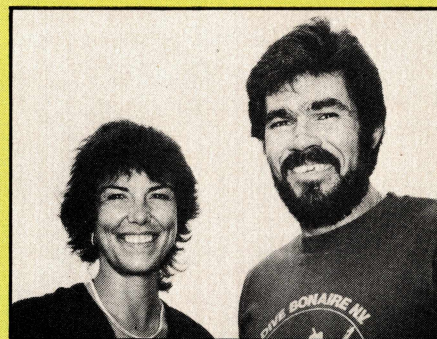
The Dive Bonaire fleet makes regular trips to 35 different dive sites, including 16 around the tiny island of Klein Bonaire. Under the direction of dive operations manager Craig Burns, Dive Bonaire's staff of divemasters and instructors is always looking for new sites within a 30 minute radius of the resort.

An unusual trait of the Dive Bonaire staff is that each member seems to have his own area of specialty—an example of the primarily Bonairean divemasters' enthusiasm for the sport. Jeremy is known for his handling of the moray eels on several sites including Sampler Reef. Paul and Elvis could be nicknamed "the bookies" because of their handling of the horses offshore—Bonaire boasts a fascinating population of seahorses, more than any other Caribbean destination.

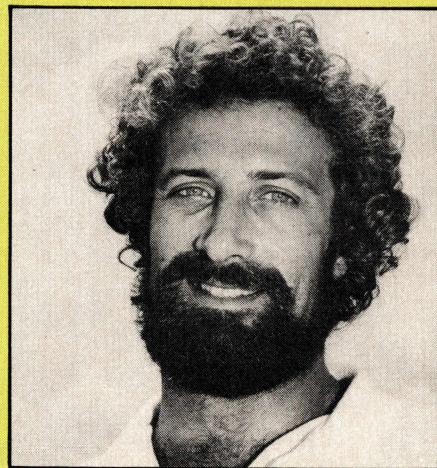
Another divemaster, Jani, is the resident black coral scout. The list of diving surprises on Bonaire seems endless, and a week exploring the Bonaire Marine Park might let you *begin* to realize just how much variety lies within this protected offshore area.

But even if by some catastrophe the entire Dive Bonaire fleet drifted away one night, divers could find enough within shore diving distance to spend hours underwater. One of the best dives is Calabas Reef, directly off any of the three Flamingo Beach piers. This is an incredible collection of critters, a dizzying dive which is a newcomer's introduction to Bonaire. Beginning in 30 feet, this reef slopes gently at a 45 degree angle to 100. The slope is a magic carpet of macro life hidden in crevices overgrown with multicolored tube sponges, hard corals and gorgonians. Before Bonaire, I never would have believed anyone claiming to have seen arrowcrabs the size of an orange, or banded coral shrimp two inches long—or the fishy symphony of dozens of big trumpets, puffers, tangs and angels. Exaggerated anemones seemed to be everywhere. It was one of the great tragedies of my diving career that I did not have an U/W photo course under my weightbelt before that trip.

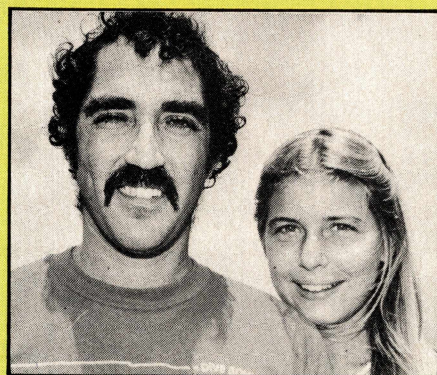
If I had more time, that could have been



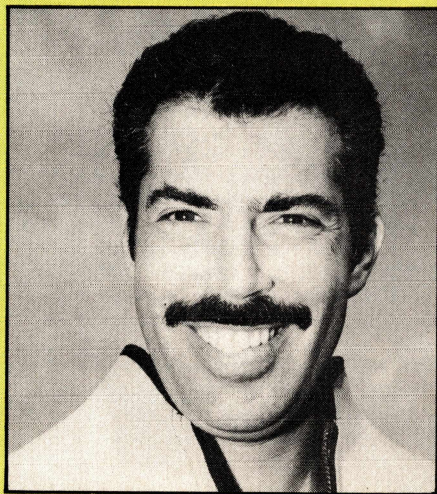
Peter and Alice Hughes



Craig Burns



Chris and Donna McLaughlin



David Feinberg

easily corrected during my stay. The lagniappe of this diver's feast of fine sites and quality facilities is Photo Bonaire. The most recent addition to Dive Bonaire, behind the dive center, is a complete underwater photo center operated by Chris and Donna McLaughlin. Photo Bonaire includes a film processing center, slide viewing room, battery charging station, camera rental department and U/W photo course classroom. A Kodak E-6 processing lab allows Chris to process up to 56 rolls per day, provided rolls are delivered by 2:00 pm.

Photo Bonaire has an extensive camera rental stock, including both Nikonos IIs and IV-As, with underwater lens selection of 35, 28, 21 and 15 mm. Professional quality Helix strobes and other accessories are also available.

Photo Bonaire's most popular service is the underwater photo course, which runs one day, costs only \$60, inclusive of equipment use. A two day combination macro and wide-angle course is also very popular.

For the aspiring U/W photographer, Photo Bonaire offers a PADI underwater photographer course (\$200) which consists of two days of instruction, with two supervised and three independent photo dives. The course covers slide editing, mounting and preparation of slide shows.

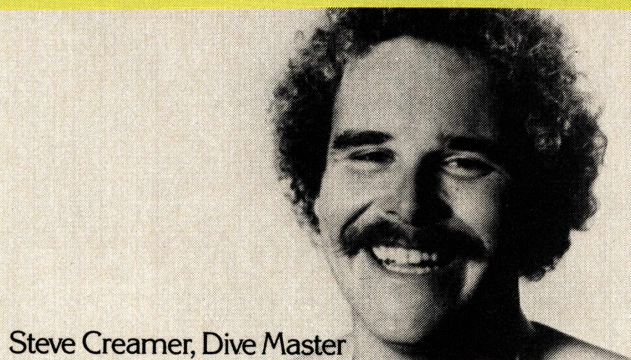
Photo Bonaire is also a qualified Ikelite Service Center and Chris can provide emergency aid for Nikonos equipment.

When Peter Hughes persuaded me to add Bonaire to my logbook, I suspected I might join that glassy-eyed fraternity of divers who are hypnotized by this desert island. And, although Flamingo Beach's "toes are in, ties are out" slogan intimidated me at first, I found the components of a first class diving holiday off the coast of Venezuela.

For information and reservations contact: Flamingo Beach Hotel, toll free (800) 847-7198; in NY, (800) 252-6323; 520 W. State St., Ithaca, NY 14850 or Dive Bonaire, 2699 S. Bayshore Avenue, Suite 700-E, Miami, Florida 33133; toll free (800) 231-4610; (305) 854-5444. 🐟

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REEF DIVING

THE FLORIDA PANHANDLE

BY LYNNE L. HALL



photo/Steve Johnson

Only four years ago Destin, Florida was a short strip of condominiums and small motels on Highway 98, between Panama City and Fort Walton. Popular only among deep sea fishermen, there were few decent restaurants and nothing in the way of entertainment.

Today, Destin is still a strip down Highway 98, but the strip is longer and livelier. There are high-rise condominiums, larger motels, several good-to-excellent restaurants and a disco.

There is also a new sport in town—scuba diving. Though deep sea fishing remains the principal attraction, in the past three years, scuba diving has become a well-established industry in Destin. Divers from nearby Alabama, Mississippi, Louisiana and even not-so-nearby Texas have discovered that the reefs which reel in the fishermen can also make exciting dive sites.

Wait a minute, you say. Reef diving off the Florida panhandle? But it's deep there, the water is murky and it gets cold in the winter—coral could never survive under those conditions! True, but I never promised you the Caribbean. Reef diving in Destin is different from the warm, shallow waters of the Caribbean—not less exciting, just different.

Instead of the familiar coral heads, here you will find natural rock. Usually limestone, these algae-covered rocks form reefs with a unique beauty. Jutting overhangs and winding canyons are home to the same creatures that frequent the coral reefs: arrowcrabs, butterflyfish, basket sponges and lobsters.

Besides the natural reefs, there is another type of reef in Destin, maybe not as pretty, but certainly as interesting—the artificial reef. An artificial reef is one that is manmade and can consist of anything from a scrapped barge, old tires, refrigerators, motorcycles and even cars. These reefs act like a magnet to attract fish. They are recognized as the best reefs for fishing. That includes spearfishing. All the best game fish gather here: snapper, grouper, flounder, amberjack and cobia. A spearfisherman can fill the freezer for winter in just a few dives.

Though these artificial reefs may not at first seem to make pretty dives (most of them are just junk strewn across the

sand), beauty will sometimes surprise you here; an iridescent anemone attached to a half-buried tire or a queen angel peering at you from the window of a rust-eaten Volkswagen.

Diving these reefs, as well as the natural ones, can provide the opportunity to see giant stingrays, moray eels, sea turtles and an occasional shark.

The inshore reefs are the ones most frequently dived in Destin. They are usually no more than a 20 minute boat ride and 60-80 feet deep. These reefs are popular for beginning divers but have much to offer the experienced diver also.

Amberjack Rocks is a natural reef of limestone rock and one of the most popular sites. The rocks form deep crevices which serve as hiding places for moray eels, arrowcrabs, stonefish and spotted drums. The most prominent game fish here are amberjack and black snapper. This is also a good spot for shell collecting. There are spiny oysters, tulip shells and jewel boxes to be found.

Destin Bridge Rubble is probably the most popular site among the dive operators. Just minutes out of Destin Pass, it covers a wide area and can easily accommodate more than one dive boat without crowding. Its 62 foot depth makes it a safe dive for beginners, while the excellent spearfishing and shell collecting make it popular with experienced divers. It is just what the name implies—parts of an old bridge. Coral-covered slabs of concrete and twisted rods of iron form a unique reef with abundant marine life. Flounder is the primary game fish here, but there are also snapper and grouper. The Bridge Rubble is an excellent site for night diving, too. At this time slipper lobster, which in daylight stay hidden deep within the jagged nooks and crannies, come out to feed. There have been as many as 90 taken in one night.

Whitehill Reef is a natural reef which closely resembles the coral reefs further south—only a bit smaller. There are many tropicals here, queen angels, spotted butterflyfish, black and gold nudibranchs and arrowcrabs. There are also two moray eels, a resident octopus and, at times, a couple of reef sharks cruise in to give a good fright, drawn probably by the schools of amberjack.

The Liberty Ship is known as a good spot for spearfishing and shell collecting. There have been excellent specimens of cowries, spiny oysters, lion paws and horse conchs found here. It is also a good spot for flounder, jewfish and lobsters. Because it is an open hull, it is considered a safe dive for beginners.

Fort Walton Car Bodies is a reef made of sunken car bodies. It draws many game fish. There are cobia, grouper, amberjack, flounder and snapper.

Butler's Barge is a large barge in 65 feet of water. It is an aesthetically pleasing dive and popular with photographers because of the stalks of purple soft coral growing over its intact deck. For the alert photographer there are many minute creatures hiding among these stalks of coral: tiny murex shells, arrowcrabs and for the very alert, perhaps a delicate yellow seahorse.

The offshore reefs take longer to get to and are generally deeper dives, but for the experienced diver and especially for the avid spearfisherman, they are well worth the time and effort.

The Jet Fighters are two F-86 fighter jets in 100 feet of water. Because of the deeper depths, the game fish here are larger and more plentiful. There are grouper, amberjack and snapper. Lobster are abundant and large. There is also a resident nurse shark.

The West Liberty Ship is in 90 feet of water and is a twin to the inshore Liberty ship. This reef, however, is not dived as frequently and is an excellent spot for huge red snapper and amberjack. It is also a good spot for shells. There are sundials, junonia and scotch bonnets.

Timber Holes most closely resembles the reefs of the Caribbean. Despite the 110 foot depth, there are islands of coral heads 25-50 feet across, complete with small caves and tropical reef fish. There are also large grouper, red snapper, triggerfish, barracuda and amberjack. For the shell collector there are nutmegs, tiger eyes and delicate jewel boxes.

The Eighteens, eighteen miles out of Destin Pass, is a coral ledge one-half mile long. It is an excellent spot for lobstering. There have been reports of up to ten spiny lobster in just one hole. Sea turtles have been sighted here, as well as nurse sharks. Shells include wentles, whelks and the unusual pen shell.

Diving in Destin, as in any part of the northern Gulf, can be unpredictable, but divemaster's predictions of slick-calm waters and sunny skies usually come true and there is plenty here for the adventurous diver. The best thing Destin has to offer, though, is its newness. The dive operators are still excited about their business and they are constantly searching for new and better dive sites. A diver who comes to Destin has a good chance to be the first to explore a new reef, an unusual and exciting experience in today's sometime crowded underwater world. 

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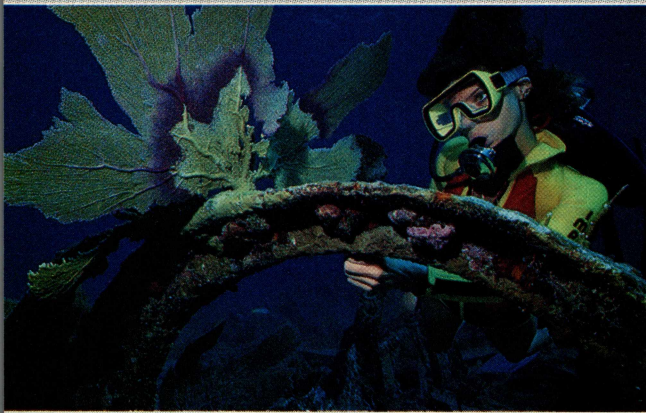
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Top left: *City of Washington* wreck. Top right: Canoeing through mangroves. Above: Green moray. Right: Barbara Doernbach celebrates Pennekamp's silver anniversary at the Christ of the Abyss statue.

TEXT AND PHOTOGRAPHY BY STEPHEN FRINK

If we could go back in time, the Florida Keys we might observe then would bear little resemblance to the Florida Keys of today. The differences would be most obvious in an automobile trip down U.S. 1, the main vehicular artery of the Keys. In the late 1950s there were a few hotels, restaurants and an occasional gas station, but nowhere near the diversity and quantity of businesses now lining the highway. This was virgin territory for all water-sports enthusiasts, but participants in the fledgling sport of scuba diving had found a truly pristine and primitive environment.

The nearest air compressors were in Miami, 50 miles to the north of Key Largo or in Big Pine Key, 80 miles to the south. There were no elaborate facilities to rent gear or teach scuba or even to transport divers to the reefs more than six miles offshore. The evolution of Key Largo into one of the world's most complete centers for scuba related activities was yet to come and all that key had to offer the traveling diver was a spectacular reef.

A combination of natural phenomena contributed to the wealth of the marine resources indigenous to the Florida Keys and especially offshore Key Largo. The climate of the Florida Keys is near the northern geographic limit within which the reef building corals can exist, since water temperature between 65°F and 90°F is essential. Reefs are complexes of corals and other plants and animals



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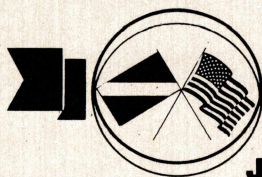
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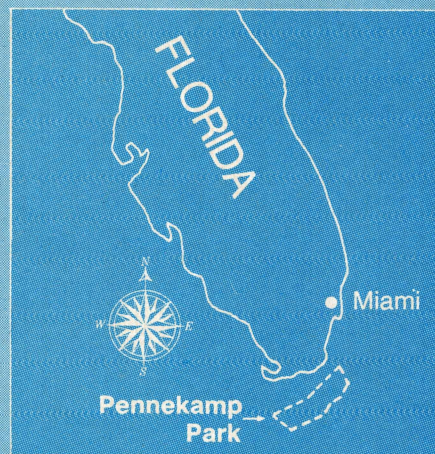
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ith the ability to extract calcium from seawater to build limestone exoskeletons which comprise the reef framework. Additional reef mass is added as these skeletons break down into sediments and are cemented to the reef. This calcification is driven by solar energy as a photosynthetic process and since light is a requirement, the clear waters in the Keys helped these coral colonies flourish.

The necessary warmth is aided by the Gulf Stream, a warm water current that tends to moderate winter water temperatures, while the land mass of Key Largo forms a barrier against movement of the cold and turbid waters of the Florida Bay into the Atlantic. The cumulative effect was the development of a magnificent reef complex 4,000 to 7,000 years old, unique in the continental United States and only 50 miles from the expanding urban center of Miami.

In sharp contrast to the marine traffic these reefs receive today, in the late 1950s it was possible to visit Molasses Reef on a Sunday afternoon and never glimpse another boat. But even then, trends were emerging. In 1957 a biological conference directed at preserving the natural resources of South Florida was



held in the Everglades National Park. Dr. Gilbert Voss of the Marine Institute of the University of Miami had been documenting damage that was occurring on the outer reefs off Key Largo, primarily as a function of coral collection. The sea life novelty industry was booming with wanton collection of queen conch shells. In addition, corals were being harvested with crowbars, hoists and even dynamite. These corals were then cleaned, bleached and offered for sale as marine curiosities. Shell collectors turned coral heads upside down in search of rare shells and tropical fish collectors were

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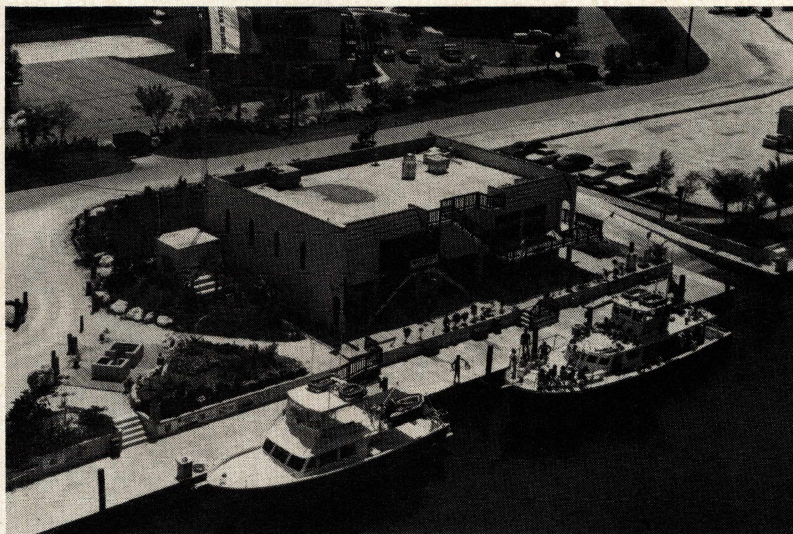


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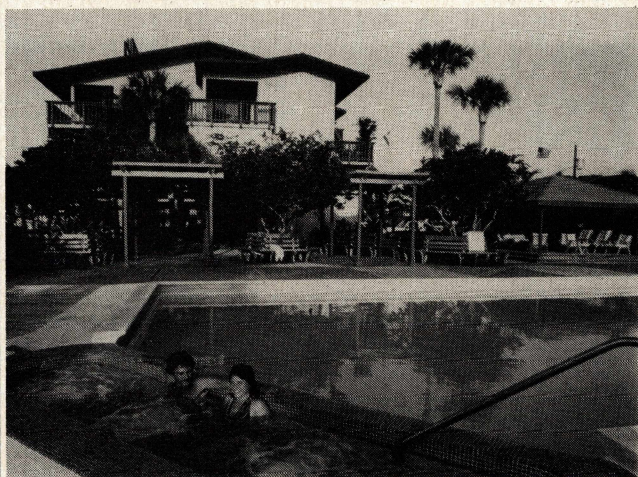
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pennekamp park

making an additional impact. All of these detrimental influences, along with spearfishing, pointed to the probability that these reefs, which had survived over 5,000 years of natural climatic and oceanic stress, might not survive human impact. Dr. Voss, in a display of exceptional insight, recommended the protection of this area.

Other participants of the conference representing the National Audubon Society and various educational and governmental agencies, were equally enthused with the proposal and petitioned the support of the Department of the Interior and the National Park Service. Public sentiment was further aroused through the untiring efforts of John Pennekamp, an editor for the Miami Herald, who lobbied ex-

tensively for reef preservation. Finally, on December 3, 1959, Florida governor Collins gave protective control of the ocean bottom, from the shoreline to the three mile limit, to the Florida Board of Parks and Historic Memorials. Three months later President Eisenhower declared the area beyond the three mile limit to the edge of the continental shelf (six to seven miles offshore) a permanent preserve under the control of the Department of the Interior.

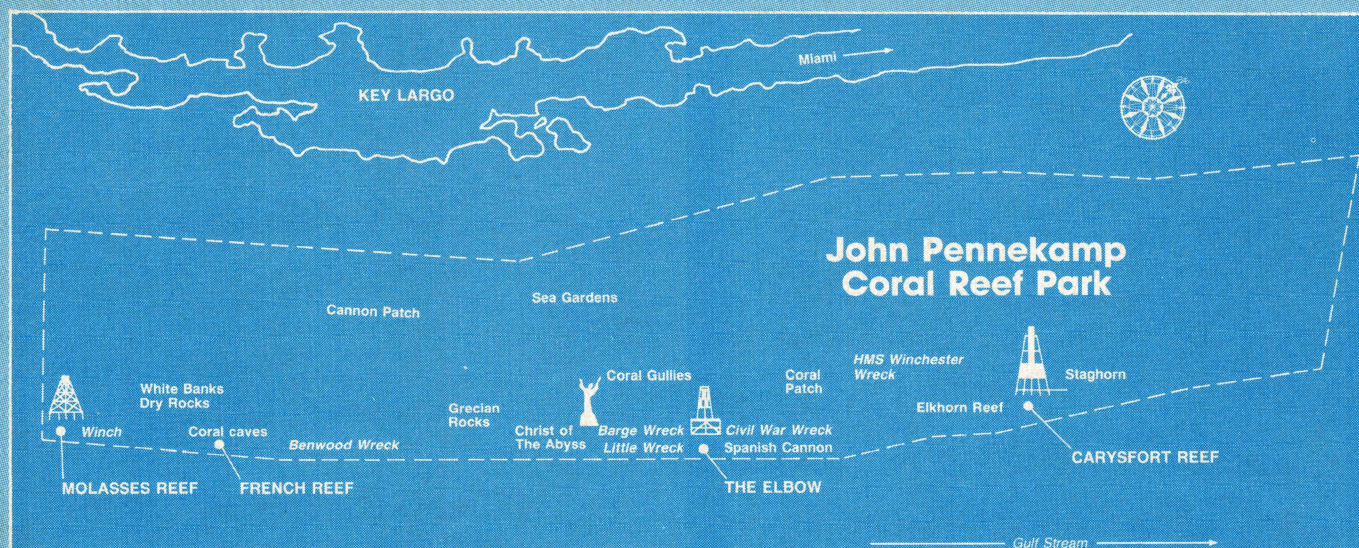
Although the entire area is managed by the State of Florida as a single unit, the area from the shore to the three mile limit today is technically John Pennekamp Coral Reef State Park while the remainder is the Key Largo National Marine Sanctuary, governed by federal statutes. The north-south boundaries of the preserve extend nearly 20 miles and encompass 188 square miles where it is illegal to spearfish, collect shells or in any way damage the corals.

Now, 25 years have passed since the protective legislation and dramatic changes have occurred within the city of

Key Largo. No longer a sleepy fishing village, Key Largo today is a sophisticated resort community depending heavily on watersports enthusiasts for support. There are more than 30 dive charter boats and 12 retail dive shops catering to scuba divers and snorkelers; the hotel, restaurant and various tourist support industries are sensitive to the importance of the traveling diver to their local economy. By conservative estimates over 1.5 million divers, snorkelers, fishermen and glassbottom boat riders enjoyed the waters of Pennekamp Park last year.

On the silver anniversary of Pennekamp Park it is appropriate to gauge the effectiveness of this noble experiment, America's first marine preserve. The impressive coral heads still stand and the fish populations flourish. The professionalism of the area's dive operators has made it easier and safer to visit these coral reefs and divers still wonder at the magnificence of this very special protected marine environment.

There is, of course, a price to the incredible and consistent popularity of



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The morning line-up for entry into Pennekamp Park

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Pennekamp Park and that price is vigilance. The rapid development in the Keys, especially over the past 10 years, has made conservation efforts more crucial. Major developments are planned for North Key Largo which will likely increase the local population significantly. Urbanization has historically had a detrimental effect on the reef and only through an enlightened and ecologically aware attitude will this be forestalled.

The Florida Department of Natural Resources has directed its efforts toward this goal and projects a number of important improvements for the future. Hopefully, more upland and mangrove buffer land can be acquired; stricter guidelines for onshore development established; bag limits for certain species harvested within the Park instituted; carrying capacities for specific reefs established and enforced; a marine traffic public information center created; more mooring buoys installed to reduce the possibility of coral damage from carelessly placed anchors; and, perhaps most importantly, increased funding for the necessary boats, vehicles, personnel and research.

The vanguards of this continuing conservation effort are the members of the local dive community whose livelihood depends on the perpetuation of this natural wonder. They are aware of the damage improperly set anchors can do and warn their divers of the harm to the coral that might be wrought by a misplaced flipper or arm. They urge that no shells or corals be taken and do not allow spears to be brought aboard the vessels. x

Author's Note: Special thanks to Renate Skinner and Carl Neisen of the Florida Department of Natural Resources for their comments and assistance.

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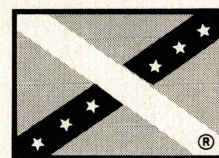
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Anse Chastanet



Above: Anse Chastanet is on a verdant hillside on the island of St. Lucia in the Lesser Antilles. It is a moderately sized resort featuring 21 rooms. In addition to the sites visited by boats, there is also excellent diving in calm water just offshore.



Boarding the Eastern Airlines jet to St. Lucia from Miami, I took comfort in the knowledge that the pilot surely knew the way. Having done only the most meager research, I knew only that we were headed south. I'd heard that St. Lucia was a mountainous island of lush tropical spendor in the Windward Islands group of the Lesser Antilles. I'd also heard that Anse Chastanet had gained respect as a fine vacation resort featuring many water-sports, especially diving. Beyond these generalities, I had few specific expectations. Fortunately, my vacation experience was one of pleasant discovery.

Our flight took us over most of the Ba-

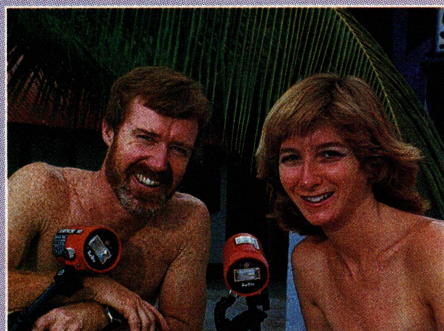
hamas Islands, the Turks and Caicos, Puerto Rico, Martinique (for a brief stop) and finally to St. Lucia. The flight was a scenic four hours, and included a magnificent Caribbean sunset. However, when we landed at Vieux Fort, St. Lucia, our sojourn was not yet complete. Anse Chastanet (anz-shas-tin-a) is approximately 50 minutes by car from the airport along a winding and occasionally bumpy road. But the route passes through several interesting small villages and areas of spectacular scenery so that the airport transfer is by no means tedious. However, it could be an unwelcome expense, the standard taxi fare being \$35 each

way. Anse Chastanet provides free roundtrip transfers as part of its eight day, seven night package and will provide one leg of the transfer free with the four day, three night stay.

Anse Chastanet is a moderately sized resort featuring a total of 21 rooms. Fifteen of the units are enclosed octagonal gazebos, two are one bedroom suites and two are two bedroom suites. In addition, there are 12 villas on adjacent property under Anse Chastanet management. All of the rooms are staggered along a luxuriant, verdant hillside. Taking the restaurant and bar as a central point of reference, the rooms are upstairs and the

Discover Newest Caribbean Dive-Away

TEXT AND PHOTOGRAPHY
BY STEPHEN FRINK



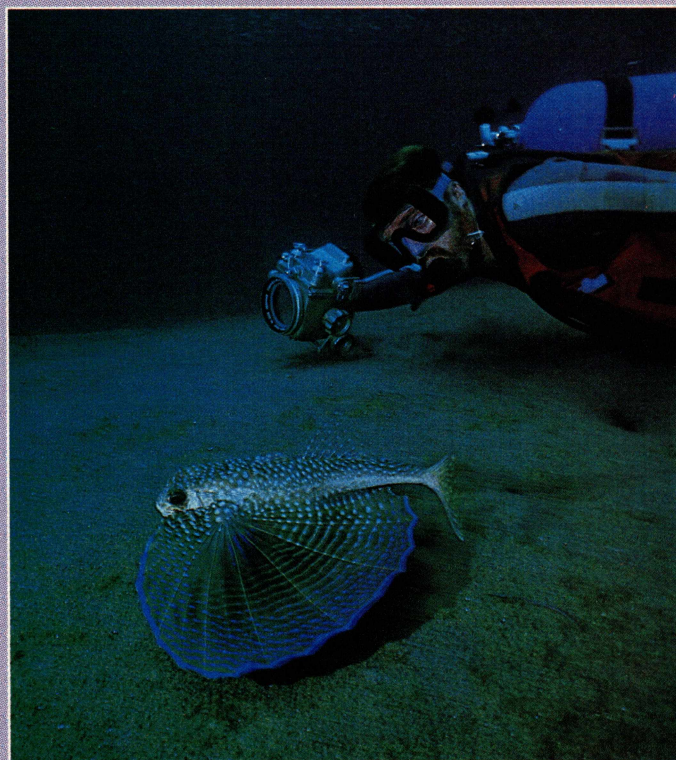
Wayne and Karen Brown



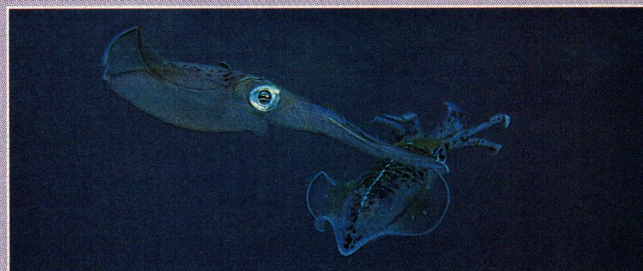
Batfish



Barbara Doernbach with an octopus.



Wayne Brown with a flying gurnard.



Squid off the resort's beach.



The interior of a gazebo room.



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ANSE CHASTANET

beach and boat activities are downstairs. The key word here is stairs, as Anse Chastanet is a vertically oriented resort.

This is not to imply a hardship for reasonably fit guests; most seem to find the climb invigorating. It's only 123 steps from the beach to the bar and restaurant, yet once the guests descend in the morning, most tend to spend the day on the beach. Lunch and drinks throughout the day are available beachside and of course all watersports are organized along the picturesque, palm-lined strand of dark volcanic sand. Sailboarding, sunfish sailing and snorkeling are popular activities in the sheltered bay (Anse means bay, Chastanet is a family name), but as beautiful as the topside aspect of this island is, only those who scuba dive may truly experience the most magnificent part of St. Lucia.

Anse Chastanet is on the lee side of St. Lucia and as a result enjoys consistently favorable diving conditions. The bay is virtually always flat calm and there is excellent diving within 50 feet of the shoreline. In fact, the beach dive was one we kept returning to because of the interesting coral formations and incredibly rich marine life. Everyday of our stay there was a school of perhaps 20 squid in the same spot just offshore. As I had never photographed squid in the Caribbean before, I found this to be an exciting, although occasionally frustrating photo opportunity. In addition, there were masses of schooling baitfish, hordes of greedy sergeant majors, flying gurnards, octopus, peppermint stick lobster, high hats, sharptail eels, batfish and a healthy sampling of more common Caribbean reef dwellers. There are several interesting shallow caves and a fascinating drop-off, all within a 200 yard radius of the beach entry. Considering the diversity of marine life to be encountered, the proximity of the beach to the dive center, the ease of entry and the consistency of the weather, the Anse Chastanet Reef is one of the best dives I've experienced directly offshore a Caribbean resort.

The dive operation is under the direction of Wayne and Karen Brown with a staff of friendly St. Lucian divemasters and boat captains. Both Wayne and Karen are involved in the various activities of the dive center, i.e. scuba instruction, resort courses, gear rental, beach and boat dives. In addition, Wayne recently set up an E-6 film processing lab as a complement to their camera rental and photo instruction program.

At this writing, divers at Anse Chastanet are accommodated on either a 20

foot Dusky with two, 85 hp outboards or a 23 foot Seabird with two, 65 hp outboards. Since dive groups have traditionally been small and none of the best dive sites are far away, these vessels have been adequate. However, as a consequence of owner Nick Troobitscoff's dedication to improving the diver facilities, a large tri-hull flattop for the resort is currently being built in Barbados. This should be ideal in that it can carry 24 divers and will load directly from the beach. Delivery of the boat is projected for late this year.

Some of the other quite spectacular dive sites we visited by boat included huge seamounts rising from gradual slopes, totally encrusted by all manner of filter feeders. Trumpetfish would hide among the gorgonians and blackbar soldierfish swam in small formations along the reef face. There were angelfish, massive swarms of brown chromis, eels, jacks, tube sponges, barrel sponges, seaweeds and some of the most spectacular soft coral this side of Micronesia. There were vertical walls and shallow reefs with high profile coral heads. We made some drift dives and other dives with the boat at anchor. None of the dive sites was more than 15 minutes from the resort and in our five days of diving, each dive entailed a new sense of discovery and wonder.

The only negative aspect to our dive experience had nothing to do with what there was to see, but rather the ability to satisfactorily record it on film. The incredible wealth of marine life indigenous to these waters is a function of the nutrients borne along tidal shifts and currents. As a result the lateral visibility might range from 50 to 120 feet, but at times there are particles in suspension that were hard to avoid in the photograph. This seemed to be affected most by the tides and occasionally by rainfall. On those rare days when the wide-angle scenics were impractical owing to marginal visibility, we could concentrate on fish life or macro subjects and still be quite productive.

A visit to St. Lucia is a fascinating experience, and while the diving is rather special, schedule time to see the rest of the island. The hotel can arrange tours of the interesting and historic Sulphur Springs and hot mineral baths; climbs to the top of the island's most picturesque mountains, the Pitons; hikes to the rainforest or shopping excursions to Soufriere or Castries.

For further information, please contact Anse Chastanet through the U.S. office at 715 Florida Avenue South, Minneapolis, MN 55426; phone toll free (800) 328-5285. To contact Anse Chastanet directly write P.O. Box 216, Soufriere, St. Lucia, West Indies or telephone (809) 454-7355 and 7354. In Canada telephone (416) 960-0710, or write: 1 Gloucester Street East, Suite 100, Toronto, Ontario, Canada M4Y 1L8.

LADY JO MA

Bonaire Scuba Center has recently purchased the *Lady Jo Ma*, a French-made 35 foot fiberglass sailboat. The *Lady Jo Ma* will be used for diving and snorkeling trips and adds to the amenities already available, such as Sunfish sailing and sailboarding, offered by the Bonaire Scuba Center for its seven night unlimited diving program. Sailing and snorkeling for the day will include a stop at a secluded beach for lunch.

The sailboat will also be available for daily charter. The vessel is being used in addition to the flattop dive boats for sunset cruises.

NAUI COLLEGE

Recently released statistics for NAUI College for the second quarter of this year indicate continuing growth for the Newport Beach, CA school. Student course registrations show a 130 percent increase over the same period last year. Year to date figures in all areas have exceeded the entire year's data from 1983.

MEDICINE OF DIVING ON BONAIRE

Medical Seminars, Inc.'s annual Medicine of Diving program will be held February 9-16. The Flamingo Beach will be the host hotel. The program will focus on decisions on medical fitness for scuba diving and be under the direction of Jefferson C. Davis, M.D., director of the hyperbaric Medicine Department at Southwest Texas Methodist Hospital in San Antonio, Texas. The faculty will include David Elliott, M.D., medical director of Shell Oil of London, U.K. Dr. Elliott is co-editor of the classic *Physiology and Medicine of Diving* textbook. Alfred A. Bove, M.D., Ph.D., cardiologist of the Mayo Clinic and medical editor of SKIN DIVER Magazine, will be the other featured lecturer.

A complete diving program, under the direction of Peter Hughes of Dive Bonaire, will be included for physicians and their guests. For a brochure, please contact: Medical Seminars, Inc., One Elm Place, Suite 204, 11107 Wurzbach Road, San Antonio, Texas 78230.

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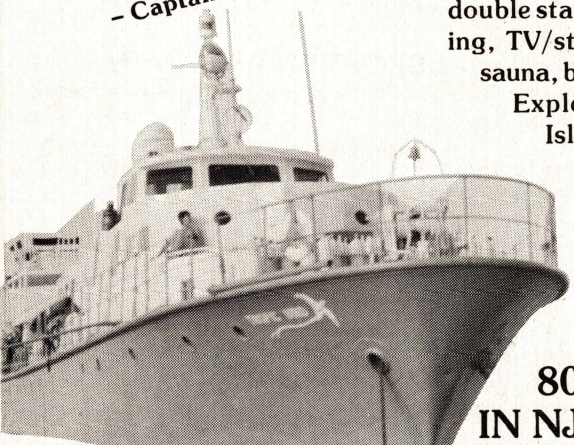
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DIVERS CLEAN CATALINA WATERS

TEXT AND PHOTOGRAPHY
BY RUSTY GELLER

The 4th Annual Catalina California Underwater Clean-up was held recently. One hundred fourteen scuba divers picked up one and one-half dump truck loads of trash along several hundred yards of Avalon Harbor bottom and in the Lovers' Cove Underwater Park.

Jon Hardy, a local commercial diver and instructor, ran the event, sanctioned by the city of Avalon and the Chamber of Commerce.



Jon Hardy briefs divers.



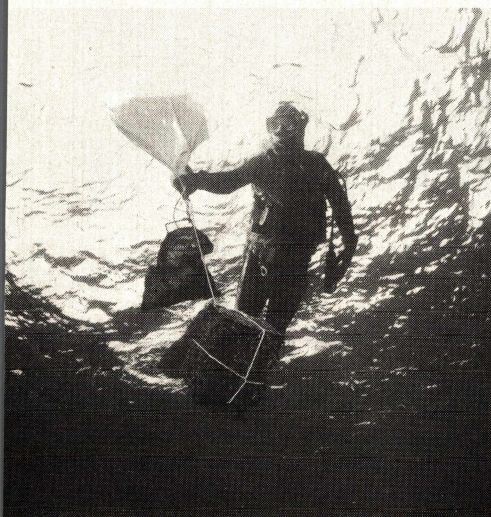
Norm Deathrage with car battery.

Catalina divers and volunteers from the mainland made 194 dives in the cold, clear waters, wresting from the sea more than the usual beer cans and bottles.

Everyone agreed that the most unusual item recovered was a red bowling ball, found in the rocks off the municipal dock in 40 feet of water. Other noteworthy items included a toilet, seven shopping



Above: Deathrage sends the battery and a goodie bag full of trash to the surface.



carts, a dozen pairs of sunglasses, two truck tires, two anchors found in a prohibited anchorage, car batteries, an hydraulic jack, a telephone, a bicycle, a San Francisco souvenir mug, a full bottle of beer which was still drinkable, a truck axle, a live hooked fish (it was set free), a lace bikini (which was empty), a honeymoon picture, one dancing shoe and a Chuck E. Cheese Pizza game token.

The red bowling ball brought the finders, Lisa Hofer and Dean Antonio, both of Pasadena, an all expense paid weekend on, of all places, Catalina Island.

Other prizes of dive gear and free services were donated by diving equipment manufacturers, dive shops and local Avalon businesses.

Commemorative T-shirts were sold by the Whalers Dive Club with profits donated to the Catalina Museum. 



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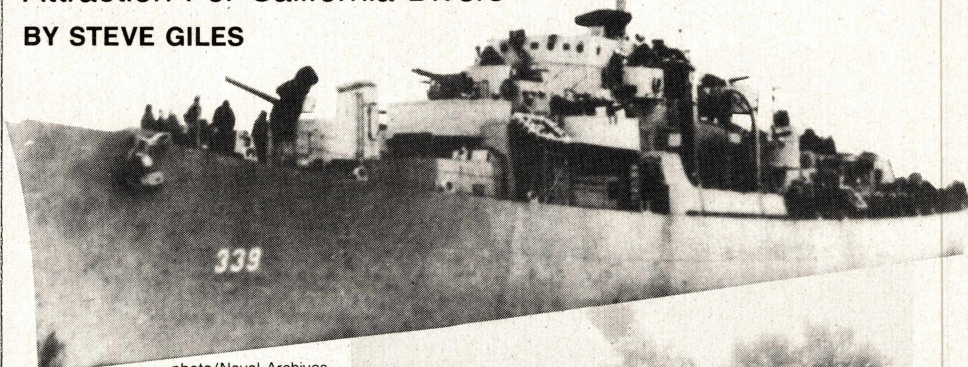
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BY STEVE GILES



photo/Naval Archives

The *John C. Butler* was a 306 foot destroyer escort. She distinguished herself against a vastly superior enemy force during the WW II Battle of Leyte Gulf. In 1970, while being used as a target vessel off San Clemente Island, California, the *Butler* broke in half. Her stern lies in 80 feet of water inside Northwest Harbor.



photo/Bonnie J. Cardone

The U S S *John C. Butler* was born in war on March 31, 1944. She was named in honor of a Navy pilot posthumously awarded the Navy Cross for extraordinary heroism in the battle of Midway. She was a Little Wolf, a 306 foot destroyer escort (DE), and lead ship of her class. Assigned to protect six escort carriers during the Leyte landings in October 1944, her small force consisting of three destroyers (DDs) and three sister DEs were surprised by a large Japanese fleet. This had slipped through protecting American units into the vulnerable landing area. The ensuing battle has been described as "the greatest sea-fight in history." It was a duel of Davids against Goliaths, the likes of which had never been seen. The Japanese force included seven cruisers, eleven destroyers and four battleships—one of which was none other than the mammoth *Yamato*, largest battleship ever built and capable of firing 3,220 pound shells from her 70 foot long barrels. In contrast, the *Butler* and her sisters had five inch diameter guns.

The *Butler* and her fellow Little Wolves charged the vastly superior enemy fleet, laying smoke to hide the fleeing carriers, firing every gun available and launching torpedoes at the multitude of targets. Their attacks were so determined that the

Japanese formation, victory in its grasp, turned away in confusion. The cost was heavy: Two American destroyers, a destroyer escort and a carrier were sunk or sinking; two carriers, a destroyer and a destroyer escort were badly hit. As the Japanese ships retired to the north, an American sailor commented "Damn it, they got away." The *Butler* was one of the survivors and received a Presidential Unit Citation for her part in the action.

In 1970 the *John C. Butler* was being used as a target vessel off San Clemente Island, CA when she broke in half, the stern sinking in 80 feet of water inside Northwest Harbor. The bow section was later towed to deep water and sunk. The stern remains upright on a white sandy bottom, with depth charge racks, two large brass props, and the letters of her name still visible to visiting divers.

Many brass relics of her past have been rescued from her, including gauges, plaques and a brass gunner's seat. Photographers never run short of interesting angles on this unique wreck. One of her five inch guns lies behind and to the port side and is sometimes visible from the stern in the clear waters of San Clemente Island. Her guns are silent and the only battle the *Butler* now fights is against the corrosion of the sea.

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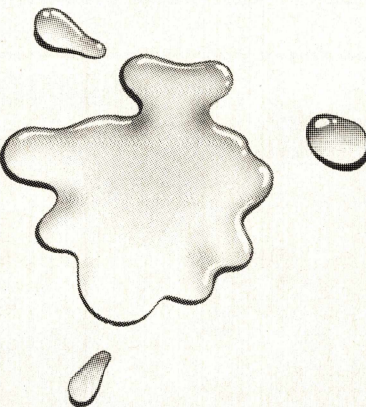
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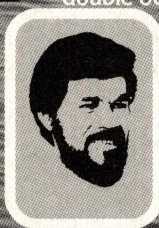
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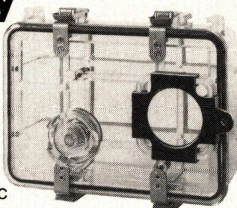
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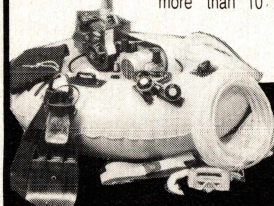
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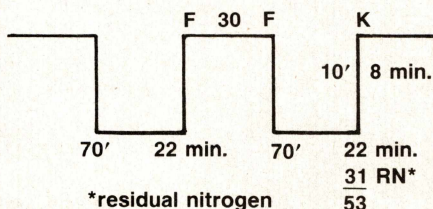
AVOID DECOMPRESSION STOPS

How Sport Divers Should Use the Dive Tables

BY RICHARD B. STREID

As an instructor at the university level for 17 years, I have found it well worthwhile to teach students how to use the Standard Navy Air Decompression, Surface Interval and Repetitive Dive tables to determine how to avoid decompression stops. Instead of leaving the divers in a position where, to dive again, they must decompress, I show them how to determine how deep, how long and the minimum surface interval needed to make the next dive without making a decompression stop.

Let's determine how we, as sport divers, can dive to our limits and not ever have to make a decompression stop. For example, a diver equipped with a single 72 cubic foot tank, diving off a charter boat anchored in 60 feet of water, has heard that there is a cave in 70 feet of water that is always full of lobster. He makes his first dive at 70 feet looking for this cave. He finds the cave and it is full of lobster. But, he is nearly out of air after 22 minutes. He marks his location and returns to the surface. It takes 30 minutes to swim back to the boat and get his tank filled and back down he goes to collect the lobster catch of his dreams. He loses all track of time, burns his tank dry and comes back to the surface with seven lobster [assuming the same rate of air usage this would again be 22 minutes]. Let's see what happened to our diver!



Unless he made a decompression stop at 10 feet for 8 minutes, our diver just got the bends—a pretty high price to pay for a lobster dinner. He also would need a second tank to make the decompression stop since he used up his entire tank on the bottom.

Now let's see how we could avoid that stop at 10 feet. We have a number of choices:

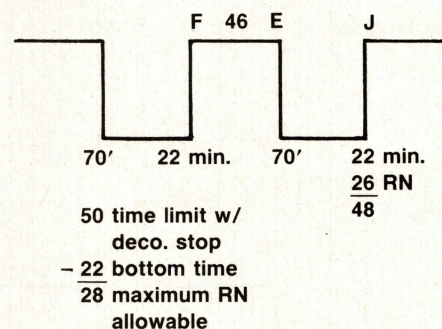
(1) Spend more time at the surface—reducing our residual nitrogen level.

(2) Dive shallower—where our time limits increase.

(3) Spend less time at the same depth.

(4) Any combination of the above.

Let's look at choice one first (spend more time at the surface between dives).



The question is how long must we remain on the surface in order to make a second dive at 70 feet for 22 minutes with no decompression stops. By looking at our Navy Standard Air Decompression Table for a 70 foot dive we find our maximum time without decompressing is 50 minutes. Our goal is to determine how much residual nitrogen (repetitive group numerical value at a 70 foot dive—see Repetitive Timetable) can be added to our bottom time of 22 minutes without exceeding the maximum of 50 minutes. To do this we subtract our bottom time from the maximum time without a decompression stop and our answer is 28. This means that as long as our residual nitrogen level for a 70 foot dive is 28 or less we do not have to make a decompression stop. Look at the Repetitive Timetable under the 70 foot column and locate the number closest to but not exceeding 28. That number is 26. If we then follow the row across we find the letter E. This tells us that if we start our dive in letter group E we will be adding 26 minutes of residual nitrogen to our bottom time of 22 minutes totaling 48 minutes—within the no decompression limits.

The last step is to determine how long we must remain on the surface in order to get from letter group F (our group designation after the first dive) to E (letter group needed to make second dive without a decompression stop). Look at the Surface Interval Table, find F on the diagonal axis and follow the row across until it intersects with column E on the horizontal axis. The minimum number in the box is 46 minutes. This is the minimum surface time required to reduce our residual nitrogen from F to E. Before completing our log books we always determine our final letter group (J) which can be located on the No Decompression Limits Table by finding 70 feet in the depth column, going across to our bottom time of 50

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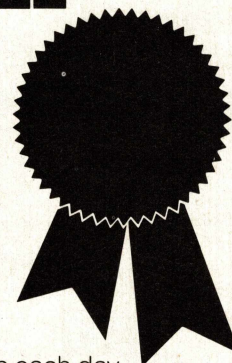
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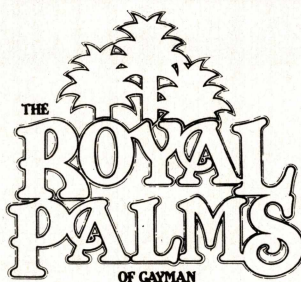
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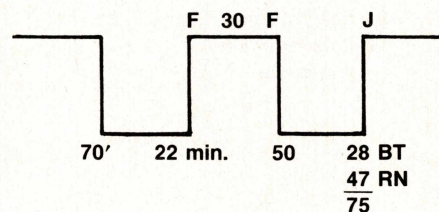
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SPORT DIVER TABLES

minutes (always round to the next highest number if yours is not in the table 48=50) and, following it up to the top.

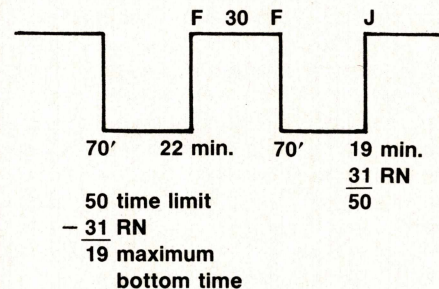
If our diver would have spent 46 minutes on the boat instead of 30, he would not have to make a decompression stop, and would not run the risk of getting bent.

In the following example (Option 2—dive shallower) a dive could be made at 50 feet for 28 minutes (less depth—longer bottom time—Boyle's Law). We know that with a 30 minute surface interval our letter group is still F.



We turn to our Repetitive Timetable and find out that F at 50 feet is equivalent to 47 minutes. When we add this to our bottom time of 28 minutes we get 75 minutes, within our no decompression limits for a 50 foot dive. We find in our No Decompression Limits Table for a dive at 50 feet for 80 minutes (closest to 75 minutes) and we are in letter group J.

Under Option 3 (dive same depth but for less time) how long can we stay at 70 feet without a decompression stop?



Again, we know our limit at 70 feet is 50 minutes (see Standard Air Decompression Table) and we look at our Repetitive Timetable to determine how much residual nitrogen is added by group F, 31 minutes. If we subtract this from our time limit without a decompression stop, 50 minutes, we get 19 minutes of bottom time. Our final letter group is J (see No Decompression Limits Table, 70 foot dive, 50 minutes). If our diver would have spent only 19 minutes instead of 22 minutes on the bottom, he could also have avoided a decompression stop.

Under Option 4 (any combination of options, 1, 2 or 3) a dive at 60 feet could be made with a single 72 cubic foot tank for approximately 26 minutes. We know, by looking at our Standard Air Decom-

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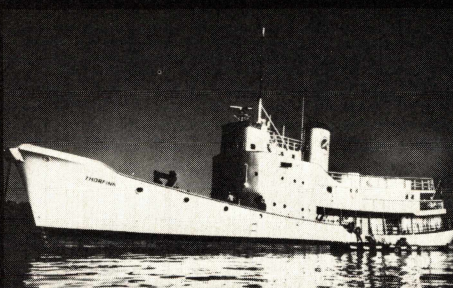
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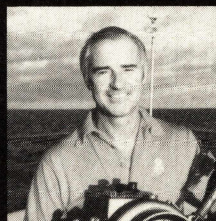
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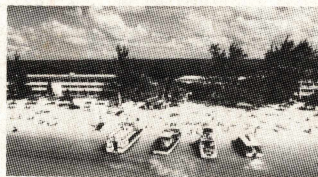
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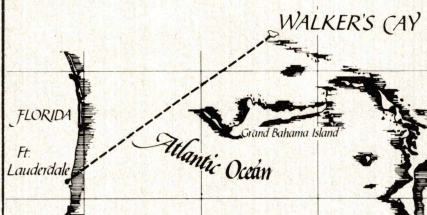
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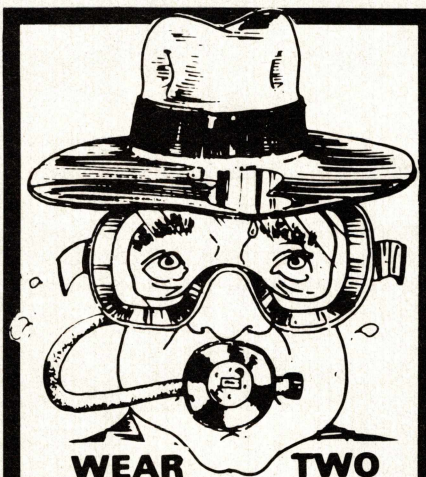
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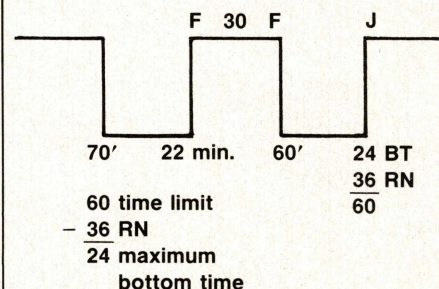
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SPORT DIVER TABLES

pression Table, that we can stay at 60 feet for 60 minutes without decompressing. We also know that F adds 36 minutes of residual nitrogen to our bottom time (Repetitive Timetable).



If we subtract, as in Option 3, the residual nitrogen from our time limit, we get 24 minutes. So we can dive at 60 feet for 24 minutes.

Diving should be fun and safe. Having to decompress is pushing the limits beyond that of fun, safe diving. With the few easy steps I have just gone over, all of us can know how to avoid potentially dangerous situations. Remember, use your tables to determine *how not* to decompress, not how long to decompress!

HIGH ALTITUDE RELICS

In a recent six day expedition to the south shore of high altitude Lake Atitlan in Guatemala, divers recovered a variety of pieces of ornamental pottery estimated to be more than 1,600 years old. The pieces are believed to have been sacrificial offerings of ancient Indian cultures and include items such as a dish with tri-



photo/Rafael Reoyo

pod base and an incense burner.

Archaeological authorities in Guatemala are described as being enthusiastic about the finds and further expeditions into the lake are being planned. Divers with experience in high altitude diving, archaeology and underwater photography are invited to contact Rafael Reoyo, 14 Avenida 6-10, Zona 14, Guatemala, C.A., telephone 682586.

CINP DIVE SYSTEM

The National Park Service at Channel Islands National Park (CINP) in Ventura, California, has recently acquired a new surface supplied diving package. Manufactured by Diving Systems International of Santa Barbara, this consists of two Heliox-18 bandmasks and a Dive Control System-1 (DCS-1).

According to Gary Davis, research scientist for CINP, the system is used pri-



photo/Steve Barsky

marily in a long term kelp forest monitoring study, and has reduced data collection from six hours to two hours on some research operations. It has also greatly improved diving safety. Reliable voice communications and unlimited bottom time are the major advantages of the equipment. The surface supplied gear will also be used in interpretive programs and for maintenance work.

Channel Islands National Park consists of five islands, including Santa Barbara, Anacapa, Santa Cruz, Santa Rosa and San Miguel and one mile of submerged land around each of the islands.

PADI CERTIFICATIONS

According to recently released statistics, PADI is currently certifying more advanced than basic divers. Figures released for the first half of 1983 show advanced certifications leading basic 23,000 to 19,000. This is in contrast to a decade ago, when the majority of divers were certified to the basic level and only a few went on to advanced levels.

PADI has identified two factors that have contributed heavily to this change. First, over 84 percent of all new PADI divers are now being certified to the open water level, instead of to basic. Second, an increasing number of these open water divers are signing up for other continuing diver education courses. To date, PADI advanced open water certifications are up more than 35 percent over last year.

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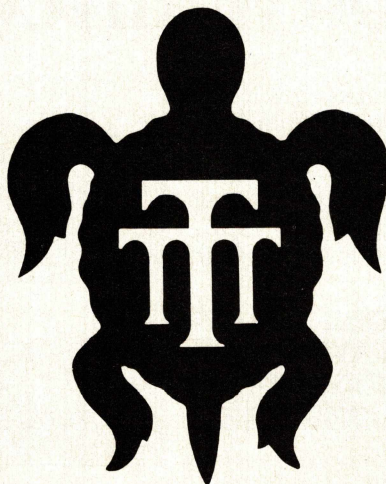
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Technifacts

BY E.R. CROSS



There are many bits and pieces of this nation's unique history and even pre-history preserved at the bottom of our lakes and rivers and under the seas surrounding our shores.

Over a period of several months Technifacts has occasionally dealt with the subject of diving for artifacts. These articles were not intended as commentary on the right or wrong of this activity. Rather, I have tried to provide information on what happens if regulations allow only archaeologists to work underwater sites, on what occurs if unregulated diving is permitted, and on advantages and disadvantages of a regulated concept of site exploration and artifact recovery.

Diving has always been a self-regulated activity—first by the commercial divers who had to develop their own rules for safety and their own regulations for work-

ing conditions; then the sport diver who has also been able, to a considerable degree, to regulate the safety of his sport.

I believe the problem that has developed within the sport diving community with respect to intruding on private or government property has mostly been owing to a lack of knowledge about who has title to the property and the regulations pertaining to entry into and diving on objects in those waters. Most divers are responsible people who think and plan constructively.

Most states now have some sort of law that gives them title to all navigable waters within their borders and those waters bordering the state. It is imperative that divers determine the laws regarding title to submerged lands that exist in their states, and then, like it or not, live within those laws. Violation of regulations is the

quickest way possible to generate mistrust and will lead to even more restrictive diving regulations.

In Technifacts for September 1984 I stated, "If educated, rational steps are not taken soon it will be too late. Too late to save by regulation many of these historically interesting and some important sites and too late for divers to have the privilege of exploring and helping to recover these bits of the past locked in the time-space of the marine environment."

In a few states there are no regulations regarding diving on or recovering objects in state owned waters. In others, such restrictive regulations exist that divers are not permitted to dive on any site. Both of these conditions are conducive to the destruction of sites, be they wrecks or archaeological, anthropological or paleontological study areas.

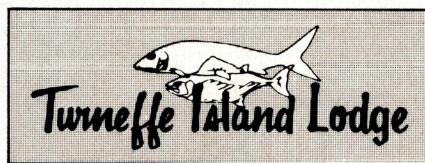
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It may also be too late to save some outstanding areas of historical interest from destruction. Because of no regulations and no educational or informational programs on the part of the state, sites are sometimes destroyed with no evaluation being made with regard to historical significance. Extremely restrictive regulations produce the same effect. States or local governments seldom have funding to enforce any overly restrictive law. Enforcing laws regulating where a diver goes, what he sees or even what he does underwater is a total impossibility unless there is one law enforcement officer for each pair of buddy divers. It seems to me that divers themselves must take an active part in the preservation of our underwater heritage so that more interesting diving environments are preserved.

Some states have recognized that legislation alone can't "preserve the historic and scientific values inherent in submerged antiquities for the benefit of all the people of the state." At present 25 states have title or regulatory authority to historic, prehistoric and archaeological resources. All of these states are working with divers through either a permit system or a contract arrangement. Most such states also grant finders' fees, payment of salvage costs, or share in the value of any items collected. In many cases the divers work closely with the state and

report their finds so that a scientific study of the objects, or sites, can be made. Unless an object is of a very special nature, it is given outright to the diver.

It is probably not feasible for one state to exactly follow laws and regulations of another state. Conditions within each state vary too much for that.

At least 25 states have laws or regulations that permit sharing finds with divers on a permit or license basis. Fifteen of those states are actively working with divers. "To write American history—to fill in the blanks about the everyday individual," according to Ms. Ann G. Giesecke in her paper, *Dive American History*. Her analysis of what has happened in this area states that, "Last year (1983) a total of 1,513 divers made important contributions to American history by locating and recording historical shipwrecks. By the end of 1983, a total of 2,883 shipwrecks were located; 2,299 by sport divers, 437 by state sponsored projects and 147 by salvors. Of those wrecks, 671 were identified as historic by states. In 1983 alone, more than six million visitors saw museum displays and projects that resulted from the work done by sport divers in 23 of the 25 states."

Virginia has an interesting plan, presented in *Preserving Virginia's Maritime Heritage*. That booklet points out, "You can help by volunteering your skills for

one or more of the Virginia Research Center of Archaeology programs. Some of the more important ways you can help are to: report all sites to the VRCA; encourage others to report sites; support the VRCA programs by volunteering your time for research and excavation."

Laws and regulations have been formulated in at least 25 of the 50 states to help preserve and scientifically study and recover the bits and pieces of underwater history that exist on an almost worldwide basis. It is now apparent that laws alone can't protect underwater archaeological and paleontological sites. There must be genuine concern by the diving community and by state legislatures, followed by cooperation between them in their rescue operation. This involves sharing of knowledge, expertise, equipment, costs and, finally, sharing the artifacts themselves whenever this is possible. Then the greatest number of people will be able to enjoy the historical objects brought to the surface by some of the two million willing sport divers in the country.

Technifacts would appreciate letters from divers regarding their experiences working with professional archaeologists, state and federal officials, other watersports enthusiasts (such as boaters) and particularly their own thoughts about our underwater heritage. If you care, one way or another, let's hear from you. 

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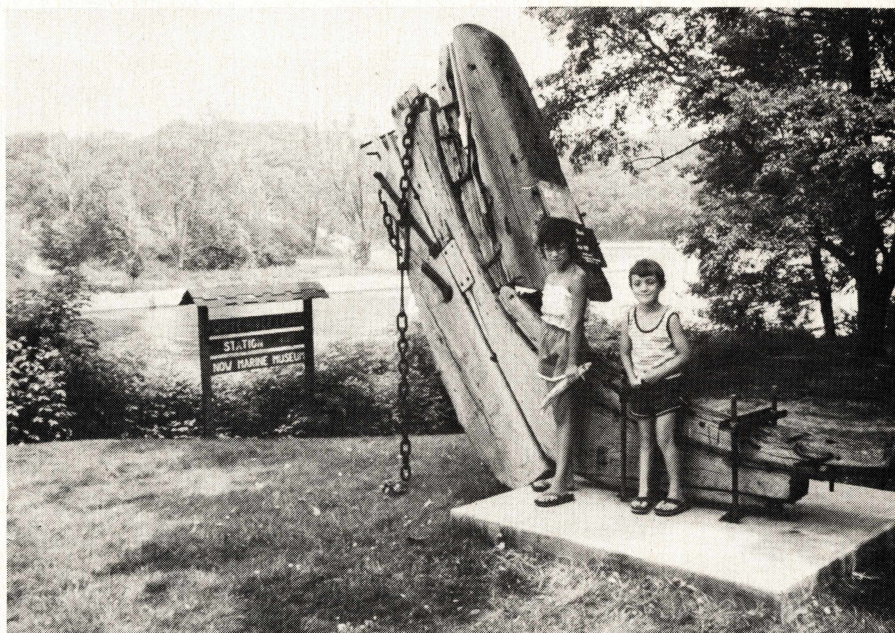
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Lake Michigan's Wrecks

**150 Mile Long Sand Dune On Southeast
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TEXT AND PHOTOGRAPHY BY BILL STEINBORN

Despite not having an abundance of large cities or widespread heavy industry, the southeast shore of Lake Michigan was an area that saw moderate shipping traffic in the late 19th and early 20th centuries. All types of ships were involved in the movement of passengers and freight between the eastern and western shores. Many of these saw early and unfortunate ends in the area between Michigan City, Indiana and Little Sable Point, Michigan. Over 50 ships perished along that 150 mile stretch of shoreline. Most of those wrecks are concentrated, however, around the few safe harbors that were available. Obviously, these ships were unsuccessful in their attempts to approach or to enter those harbors.

There are no natural harbors on the southeast shore of Lake Michigan, because the entire area is one long sand dune. The harbors that were created are long, narrow chutes, leading inland, usually, to a river or small lake. Entering these harbors in stormy seas was difficult and at times, impossible. Many a captain saw his ship destroyed when attempting to enter these narrow harbors: The wind and waves would push it wide of its target and onto the beach or into the rocks of the breakwater walls.

Examples of this type of tragedy are evidenced by the fates of the *Henry Cort* and *Contest*. The whaleback steamer *Henry Cort* struck the north breakwater wall at Muskegon, Michigan while trying to enter the harbor in heavy weather on November 30, 1934.

One need not dive to find the final resting place of the schooner *Contest*. The *Contest* was pushed wide of the harbor entrance at Whitehall, Michigan on October 25, 1882. A strong northwest wind pushed the schooner ashore after she missed the harbor.

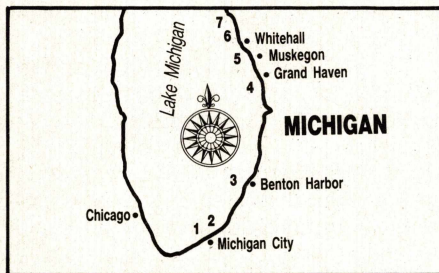
The following wrecks are considered to be some of the best in the southeast section of Lake Michigan. In most cases Loran C coordinates have been given to allow divers to be able to find the wrecks. Keep in mind, however, that in some cases state laws govern the removal of items from wreck sites. Check before removing any items. In any case, should you find something of historical significance, see that it gets shared with the nondiving public by placing it in one of the many museums in the area.

The steamer *Frank W. Wheeler* became stranded and sank on December 2, 1893, three miles north of Michigan City, Indiana (Loran C: 50278.9 x 33228.7). The *Wheeler* was 300 feet long, with a gross tonnage of 1,866. Her machinery and part of her cargo of coal were recovered and she was forgotten for more than 80 years. Wreck hunter Gene Turner found the *Wheeler* resting in 25 feet of water in April of 1975. Since that time many divers have visited and enjoyed this wreck. The sand, which now almost covers the *Wheeler*, has hidden many of her artifacts. However, the lucky diver who visits her after a heavy storm may still find a worthwhile souvenir.

Nearby is another wreck that suffered

the same fate as the *Wheeler*. The paddlewheel steamer *Eureka* stranded and sank on October 12, 1873, just south of the *Wheeler* (Loran C: 50281.2 x 33237.4). Little remains of her 240 foot hull. The 30 foot depths will allow the diver time to look for whatever small treasures may remain.

The schooner *Havana* foundered eight miles north of Benton Harbor, Michigan on October 3, 1887 (Loran C: 50021.9 x 32888.1). The *Havana* was a two-masted schooner, 136 feet in length, built in 1871. She took three men and 600 tons of iron ore to the bottom with her. The ship was located in October of 1973 by Gene Turner. The *Havana* lies broken and scattered on the bottom in 52 feet of water. The sand surrounding her comes and goes with the wave action, making her a good dive on the right day. Her anchors have never been found, but should be nearby, waiting for some lucky diver who ventures out away from the wreck.



Seven popular wrecks in Lake Michigan are, by number: (1) *Eureka*, (2) *Frank W. Wheeler*, (3) *Havana*, (4) *Ironsides*, (5) *Salvor*, (6) *State of Michigan* and (7) *Brightie*.

The wooden steamer *Ironsides* sank on September 15, 1873. After making the trip across Lake Michigan from Milwaukee, Wisconsin with 18 passengers and about half a load of freight, Captain Harry Sweetland decided it was unsafe to enter the harbor at Grand Haven, Michigan. At 6:00 am he decided to turn back to Milwaukee, but faced very heavy weather. About noon the ship sank four miles southeast of Grand Haven (Loran C: 49494.5 x 32525.3) in 120 feet of water. Twelve crew members and nine passengers went down with her. In 1966 a group of Michigan college students, who believed her to be a coal barge, did top-side surveys with a television camera and gave their findings to Gene Turner. He knew from his previous research that they had, indeed, found the *Ironsides*. Many fine artifacts were recovered from this wreck and given by Turner to the Lighthouse Museum in Michigan City, Indiana. The *Ironsides* was 233 feet long and 32 feet wide. She was built in Cleveland, Ohio in 1864. The ship now sits upright, facing the east. Her upper structure is gone, but she is intact from the engines to the stern. Only experienced wreck divers should penetrate this vessel owing to the depth and condition of her hull.

The steel barge *Salvor* broke her towing line and sank September 26, 1930.

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The *Salvor* was being towed by the tug *Richard Fitzgerald* when the line snapped and she sank, with a cargo of stone, taking 11 crewmen down as well. The ship was located by Gene Turner two and three-quarter miles north of the lighthouse at Muskegon, Michigan (Loran C: 49355.8 x 32467.0). She lies in 25 feet of water, partially covered by sand and her cargo of stone. The *Salvor* was 253 feet long, 44 feet wide and was built in 1896. Digging in the sand near the wreck, especially early in the year, can produce items of interest to the diver.

The *State of Michigan*, a wooden steamer that sank August 18, 1901 on a trip between Chicago, Illinois and Muskegon, Michigan, offers fine diving for the wreck enthusiast. After 28 years of service the ship simply sprang a leak and sank two miles northwest of Whitehall, Michigan (Loran C: 49263.4 x 32453.8). Sitting upright and fairly well intact in about 70 feet of water, this is an ideal adventure for divers of any experience level. The wreck was located by Jim McArthur and John Steele in 1968 and has yielded many fine artifacts. Originally built as the *Depere* in 1873, she was 165 feet long and 29 feet wide. Despite many visits from divers over the years, digging in the sand can still produce some worthwhile items. The ship has damage only to her stern and can be penetrated by experienced wreck divers.

The schooner *Brightie* foundered and sank eight miles north of Whitehall, Michigan on August 23, 1928. The *Brightie*, built in 1868, was 182 feet long and 33 feet wide. In the 1890s she was reduced to a tow barge and carried mostly lumber. She broke tow from the *C.H. Bradley* and sank with a loss of one of her seven crew members. Her broken remains were located by Gene Turner in 1981 about one and one-half miles from shore in 80 feet of water. One of her anchors has not yet been found and more items await the diver who will search hard enough to find them in the sand.

Many more shipwrecks await discovery in this area of Lake Michigan. What of the long-lost *Alpena* that disappeared with all hands on October 16, 1880 or the ill-fated *Chicora*, lost off South Haven, Michigan on January 21, 1895? The search goes on for these and many other wrecks. When found, they, too, may be added to the list of Lake Michigan's best wrecks.



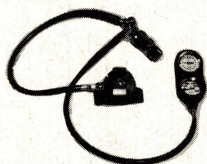
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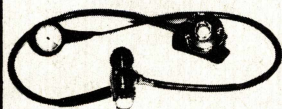


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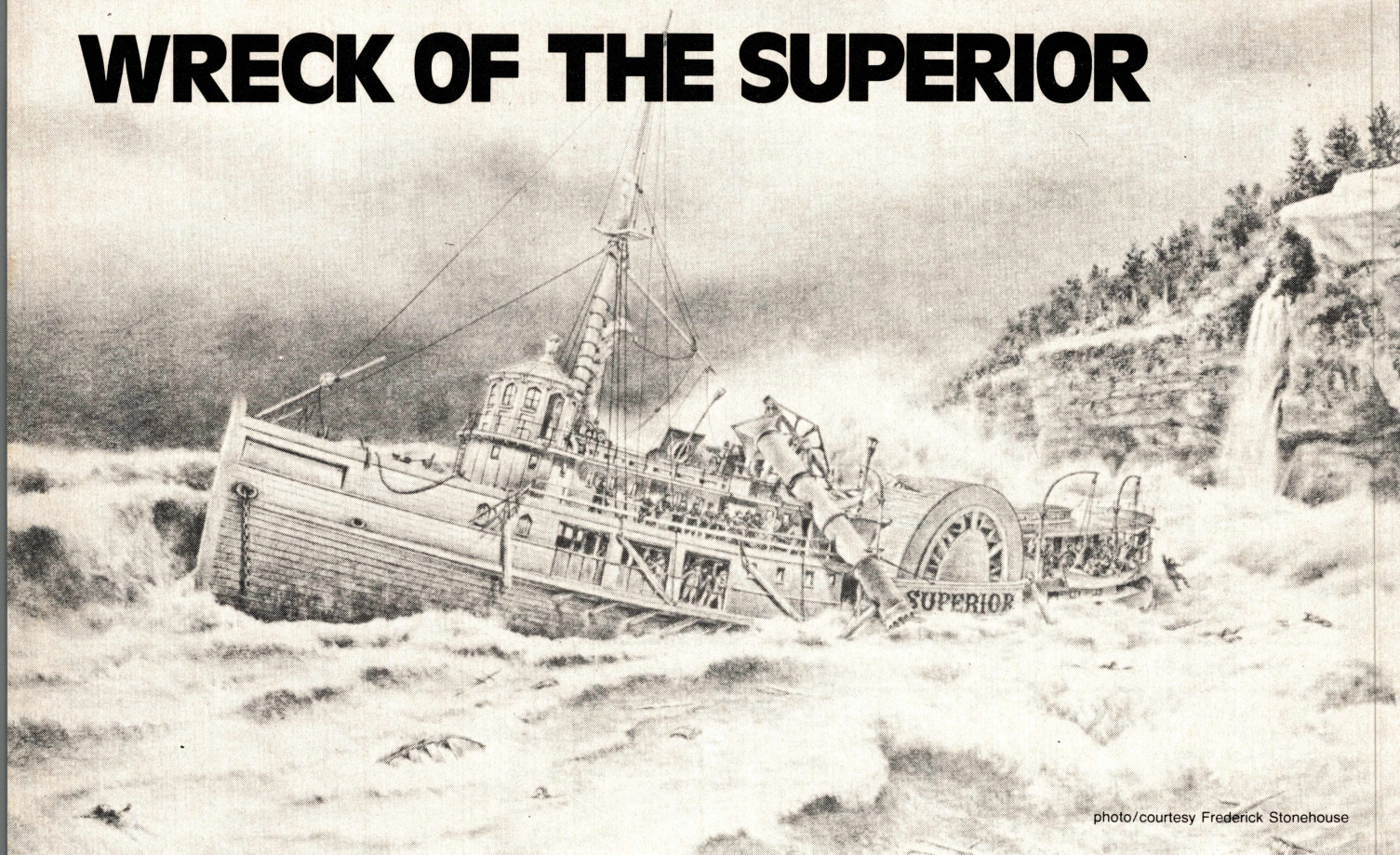
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WRECK OF THE SUPERIOR



photo/courtesy Frederick Stonehouse

Sidewheel Steamer Scattered in Shallows Close to Shore

BY BETTEY TOMASI

Just mention the lake called Superior to any avid wreck diver and your conversation is already determined for the duration of whatever event brought you together. Dramatic names like Isle Royale's sunken ore carriers, *Emperor* and *Congdon* invariably creep into the dialogue. Romantic epics of the *America* and the *George C. Cox* emerge to remind us of the Great Lakes' might over man. And, valorous sagas of such ships as the *Kiowa* (see SDM, February 1983) near Grand Marais, Michigan are all tales waiting eagerly to be swapped.

But, shipwreck divers are a breed apart. One dive simply whets the appetite and the two tank trip is nearly always the order of the sport diver's excursion. The second dive of the day, generally shallow, can be just as rewarding as the first. Such was the case when we decided to stop at the scattered remains of the 567-ton sidewheel steamer, *Superior*, on a return run from the *Kiowa*. The *Superior* is only a few yards south of the spectacular Cascade Falls in the middle of the world famous Pictured Rocks National Park which is embraced in much of the territory traversed between Munising and Grand Marais, giving the boat traveler an added attraction.

Even though the *Superior* is in only 10 to 20 feet of water, and close to shore,

she is not as frequently dived as some of the better known wrecks for two reasons. She is less accessible (can only be reached by boat) because of her considerable distance from Munising Bay and her wreckage is so scattered that she is difficult to locate.

This exceptionally hot day in July, unknown to us at the time we spashed off the stern platform of the vessel, *Ranger*, we were to spark a new enthusiasm in diving this somewhat overlooked wreck. However, since we were not yet aware of the excitement soon to be generated, we contented ourselves with the *Superior's* fascinating story.

Only 11 years old, and having spent just two of those years on Lake Superior, the ship had left Chicago on October 25, 1856 laden with mining supplies. She ran into one of the sudden and notorious autumn storms which Great Lakes' mariners have learned to fear and respect over the years. This one was from the northwest and, to complicate an already difficult situation, at night. A letter, written by one of the survivors, Joseph W. Dennis, tells us, in lurid detail, his version of what actually transpired both during and after the event. It was addressed to the editor of the New York Times and reads:

"We left the Saut (author's note: Saut refers to the Soo, a colloquialism for

Sault Ste. Marie, a port city in Michigan) on the morning of Wednesday, October 29, weather being favorable until toward night, when it commenced blowing from the northwest, raising a heavy sea. The boat rode very well until 11:30 pm when she carried away her rudder, and immediately came round in the trough of the sea. The first sea that struck her afterwards carried away her smokepipes, throwing her freight and cattle down to leeward. The captain and officers commenced throwing her deck load overboard. This was found a difficult operation on account of her being down almost on her beam ends, with heavy gangway planks lashed across her gangways to keep the sea out. This had been done previous to her losing her rudder. It was now found that she was taking water rapidly. Hands were called to man the pumps, but these were so small as to be of little avail. By 12:00 the water had entirely extinguished the fire in her furnaces, the engine stopped and all hopes of saving her were given up. I then went from the deck to the cabin, to make preparations for going overboard, in case she should sink, as it was evident that she must soon do so. I divested myself of part of my clothing, in order not to be overladen. I then took two life-preservers, which had been thrown aside as useless,

on account of the faucets having been rusted. These I tied round me under my coat, securing them by means of a sheet, which I tied over them.

"At 1:30 am a cry was heard of 'rocks! rocks!' This brought all to their feet, and a rush was made for the boats, there being only two which could be got at; one on the promenade deck, just aft the starboard wheel and the other on the hurricane deck, right above it. The ladies were assisted into these boats by their friends. One young man from Superior City (Stephen Minter by name) had four sisters with him. When I last saw him he was sitting in the middle of a boat and they were clinging to him in the vain hope that he might save them. Alas! They all found together a watery grave. At this time Captain Jones came along and said, 'You must not do anything rashly; stick by the boat, it is probable she will stand it when she strikes.' They then threw over her small anchor, which held her until her stern struck the rocks. The first heavy sea broke her chain, and she came broadside on with a tremendous crash, which caused her to settle down very much.

"Previous to this, I had gone forward and got two stools, with tin cans under them, prepared for life preservers. On my return through the cabin I heard the captain say to some of his crew, 'This is the fourth boat I have lost, and it is probably the last.'

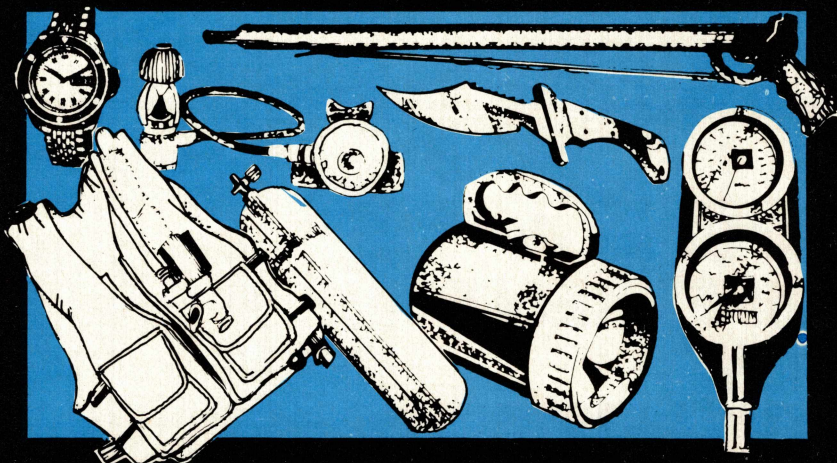
"I lashed the stools together by means of a sheet, which I had brought from one of the staterooms, and as soon as she struck I jumped overboard, anticipating the time of her breaking up, as I saw she must very soon go to pieces. The first sea threw me nearly to the rocks, but its return carried me back. I turned around to look at the wreck, and saw that a heavy sea had carried away the cabin, boats and all, into the water, but the roar of the surf was so terrific as to prevent my hearing anything of the cries of the sufferers. The next sea came down upon me with a heavy load of timbers from the wreck, knocking me senseless and causing me to let go of the stools. I sunk, and on coming to found myself strangling, and struggling to reach the surface, which I reached and caught two breaths, when another sea came on laden in the same way. This struck me also, rendering me a second time senseless. When I recovered I found myself lying on my face on the rocks, with a heavy pile of driftwood upon me. Every sea that came in brought its load and at the same time lifted the whole mass, so that after a while I was able to extricate myself.

"Hearing voices beyond me, I crawled toward them, and found a number huddled together under the shelving rocks. The place where we cast was not earth, but was formed of fragments of rocks that had fallen from those that projected over. It was, I should judge, 100 feet long by five broad. We shivered out the night, suf-

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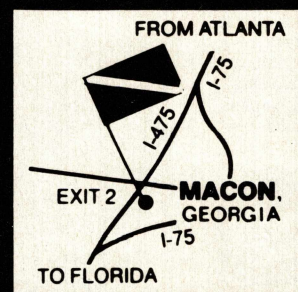
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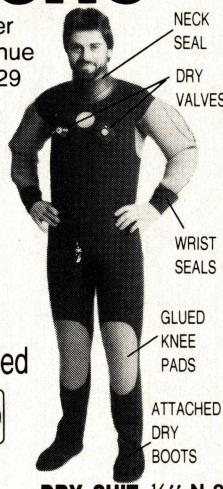
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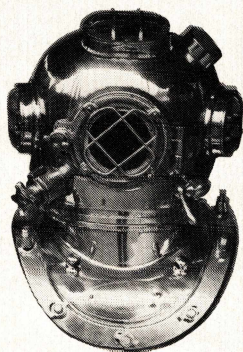
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Don't miss the November issue's colorful feature article highlighting the new

BOOK OF FISHES

skindiver

on sale October 30



SUPERIOR WRECK

fering intensely with the cold, and anxiously looking for daylight. All our efforts for fire proved unavailing. From the time the boat struck I am positive that she did not hold together more than 15 minutes, before she was piled up on the rocks. At daylight we discovered that her wheels were left where she struck, about 200 feet from where we were, and projecting out of the water about 10 feet. On one wheel five persons were clinging—on the other two—still alive, every sea breaking entirely over them. They called to us for help, but it was of no avail; the sea running so high as to render it impossible, even had we the means within our reach.

"One by one we saw them, poor fellows, drop off, benumbed with cold, and unable to cling longer to this, their forlorn hope. Among those whom we recognized on the wheels were the second mate, the steward, second clerk, two saloon keepers and a fireman. The other we supposed to be a passenger. After passing a miserable day, we built a shanty as best we could of pieces of wreck, wet mattresses, blankets and pillows, and huddled into it together for warmth.

"We were now 18 in number. A young lad, of the name of Sisson, under the care of Mr. A.J. Foster, caused us much trouble during the night. Being deranged, he was roaming about, and it was with much difficulty that we could keep him down. On the morning of the second day we found the sea running still heavier than on the evening previous, and watched anxiously for it to subside, as our only chance of escape was by getting off in a boat. Meanwhile we subsisted on some raw cabbage and some raisins.

"The wind shifted about noon, and the sea ran down almost immediately. We patched up one of the boats which came ashore, and managed to launch it. This was not an easy task, as we were wet, cold and hungry. Eight of our company got into the boat, the first mate, Mr. Davis, of Detroit, taking charge of her. We proceeded about two miles toward Grand Island, when four of us were landed, viz, the first engineer, one deck hand, one fireman and myself, getting again very wet and cold, landing though the surf. My feet had now become so swollen, that I was obliged to cut open my boots from the toe to the instep. Mr. Davis left us and returned to the rocks, for the remainder of the party, promising to pick us up in the morning. This was about 4:00 pm, and we were to travel on during the night. We started into the woods in hopes of finding a house. We found the snow 16 inches deep, which caused intense pain to our chilled and swollen feet. We wandered through the night along the bank of the lake, finding only perpendicular rocks

for some distance. In the morning we came to a small sand beach, near the mouth of Grand Island harbor. Here we saw certain indications that the mate and his party had landed; also, that he had left part of his company and gone away with his boat. We learned, afterward, that he induced them to go ashore, and then left them privily, thinking probably, that the boat was overlaid. This party, so left, started through the woods, down the bay, hoping to find human habitation. Those who were with me, the engineer and his two men, finding that we were left, became disheartened, and said they would stay where they were till succor came, as the boat had taken with her all the provisions, consisting of some flour, some butter and a few raisins.

"About noon, Saturday, November 1, I overtook the men who had landed, they having got down off the rocks onto a point of sand, putting into the bay. We were now in sight of a house at the foot of the bay, the distance to which was about two miles across the water and six or seven around by land, through a dense cedar swamp. These men had given up and laid down, intending to wait till some boat should come to their relief. I proposed going around the bay that night. To this proposition not one of them would accede at first. After shivering on the sand about two hours and getting a little rested, two of the number concluded to accompany me.

"We started at 2:00 pm, walking on the beach and wading in the water. We reached the foot of the bay about dark. We had then, I should judge, about four miles to go, but the night was unusually dark and the tangled underbrush and fallen timber rendered the traveling extremely painful and difficult with our swollen feet and exhausted frames. My two companions soon fell behind, so that by 2:00 am I heard nothing of them. I was at this time so much exhausted myself as to be unable to travel more than 20 minutes at a time. Then I would sit down and nap. This I scarcely dared to do, fearing that I should be unable to proceed, should I sit too long, or perhaps, that I should not awake at all.

"Painfully, indeed, was the remainder of my journey performed. Alone, far from home and beloved friends, in a bewildering forest, with my feet so swollen and benumbed as to be incapable of feeling, I felt almost at times about to give up. About an hour after daylight, however, I succeeded in reaching the house of Mr. Powell, who immediately took his boat and some provisions and went to look up the scattered suffering party whom I had left behind. He brought them all in, seven in number, in the course of an hour, and never did I behold such a wretched, woe-begone set of human beings. We rejoiced together over our almost miraculous deliverance, but soon the pain,

(Continued on Page 108)

Phone Central Last!

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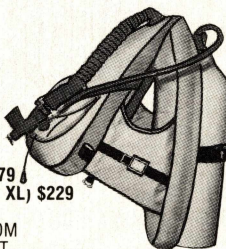
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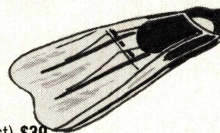
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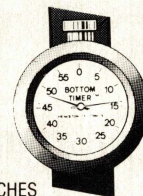
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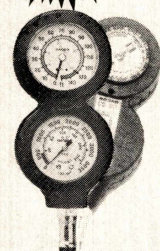
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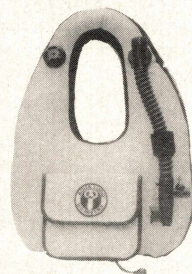
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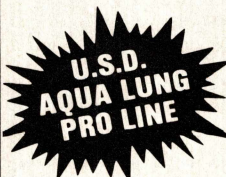
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HANDY DIVER/ PHOTOGRAPHER Spare Parts Kit

TEXT AND PHOTOGRAPHY
BY ROD CANHAM

One facet often overlooked in underwater photography is the pre-dive preparation and post-dive storage of camera equipment. Searching for a lost bolt that holds a strobe head to its extension arm or a threaded screw that connects the mounting tray to the base of the Nikonos camera can be aggravating, time consuming and a source of real frustration to the underwater photographer.

One way of avoiding this is with a watertight spare parts kit. It's compact, inex-



pensive and easy to build. It allows you time saving access to the parts and a quick inventory check when they might be running low.

Using only a kitchen knife, typewriter, less than \$20 in materials and 30 minutes of time, the spare parts kit can be built from scratch and be ready for use. To start, the following items are necessary:

- 1 watertight box—such as made by Pelican products or U/W Kinetics
- Up to 12 empty 35 mm film canisters
- 1 piece (12 x 12 inches) of two inch thick florist's foam padding
- 1 package of one inch circular removable labels
- A kitchen knife with a serrated edge
- A typewriter

Once compiled, begin the assembly:

Step #1—Measure the inside dimension of the watertight box.

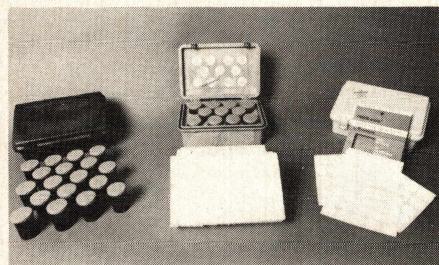
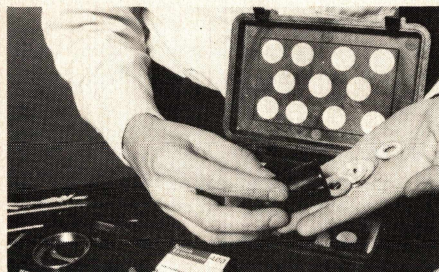
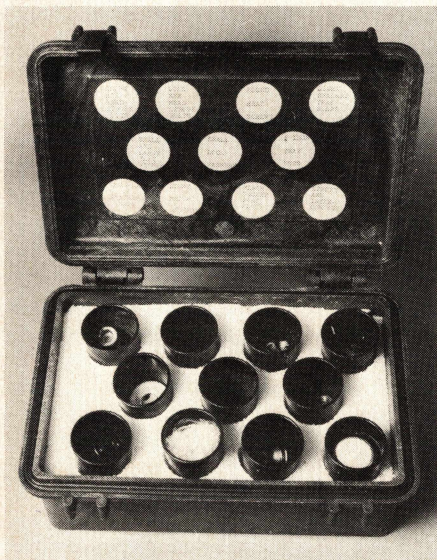
Step #2—Cut the two inch florist's foam padding to size using a serrated kitchen knife. Then, press the cut piece into the box.

Step #3—Use the tops of the empty film canisters to mark their placement in the spare parts kit. Then, press down to leave an indentation in the foam.

Step #4—Center the film canisters over the indentations and one at a time press them down as far as they will go. Because of the nature of the florist's foam, pressing down on the canisters is all that is necessary for their placement.

Step #5—Itemize the parts to be stored in the spare parts kit. Then, type out their individual labels. Dennison Pres-a-Ply® were the most applicable.

Step #6—Position the labels over their



corresponding canister locations and apply to the inside of the watertight box cover. Note: The labels will not adhere to the lids of the canisters.

Step #7—Load up the canisters and the kit is ready for use.

Items for storage can range from nuts, bolts and washers to batteries, O-rings, port plugs, etc. The possibilities are limited only by the user's imagination and are not necessarily restricted to underwater photography.

Avoid the frustration of searching for a vital part and get organized, with this compact, watertight spare parts kit.

New England Divers October Super Savers

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and great ones.
Ask me."

Dick Jacoby

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Advanced

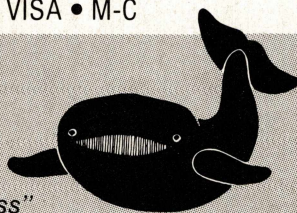
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SUPERIOR WRECK

(Continued from Page 105)

caused by the warmth to our limbs, be-
came almost intolerable. For three days,
I suffered the most excruciating pain in
my feet. They were black to my ankles,
and these were so much swollen as to
nearly fill up the legs of my pants. We
were treated with the greatest kindness
by Mr. Powell and his wife, their kindness
seeming to me the more to be appreciat-
ed as provisions in those regions are
never abundant. On the following Thurs-
day the first engineer, Mr. Coolahan, with
four hands, started for Marquette, 40
miles distant, in order to intercept a boat
to take us toward home. At Marquette,
Capt. Ryder, of the propellor *Gen. Taylor*,
heard the story, and came down and took
us off. He also picked up the mate and
his company, who had made their way to
the lighthouse.

"We left Grand Island harbor on Sun-
day, the 9th, and landed at Detroit on Fri-
day, the 14th Nov. On our arrival at De-
troit we were kindly furnished—those who
wished to go to Chicago—with passes
over the Michigan Central.

"Words are inadequate to express my
joy and gratitude at arriving at my home,
where I could procure medical aid, which
I had for the past three weeks so much
needed. Add to this the sympathy of kind
relatives and friends. My physician tells
me that I am doing as well as, under the
circumstances, can be expected. I have
the prospect of being laid up for the win-
ter, but this contrasts favorably with the
one which we had at one time contem-
plated—that of being obliged to remain
during that season near the scene of our
terrible shipwreck, the horror of which will
never, never be obliterated from my
memory. The number of the lost, I should
compute at 42." *Joseph W. Dennis.*

Memories of Joseph W. Dennis' letter
were lingering in our divers' imaginations
when one of our buddies suddenly got
that once in a lifetime gleam in his
masked eyes! Perhaps it was a reflective
gleam from what every diver daydreams
about, but few realize. Gold! That memo-
rable afternoon, in Lake Superior, where
treasure means a rusty spoon, brass
valve, or occasional piece of china, our
diver found, settled on the bedrock, a
shiny \$1 gold piece, dated 1856 (same
year as the wreck itself). Living up to her
reputation for preserving all she claims,
Lake Superior had kept that coin, smaller
than today's dime, as shiny as it was that
October day in 1856 when it was deposit-
ed, so unceremoniously, on the bottom.
Frenetic fanning by the rest of us hope-
fuls failed to produce any more gold that
day, but guess who is already making
plans for a return visit to the 'not so dra-
matic' wreck of the *Superior!*

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**TEXT AND PHOTOGRAPHY
BY ERIC HANAUER**

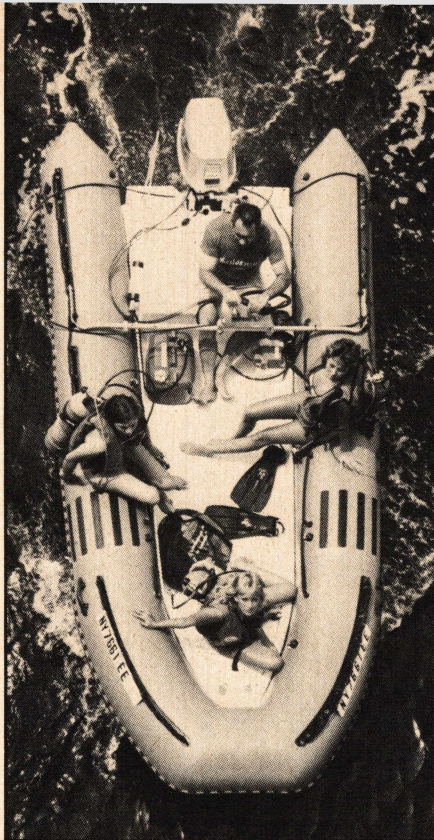
In the beginning there were rigid-hull boats. They went fast and handled well, but were heavy and difficult to store and transport. Then there were inflatables. They were light and stable, but bounced and skidded a lot. Then someone in England mated inflatable tubes to a fiberglass hull. Although it was heavier than an inflatable and needed to be trailered, the hybrid boat combined the stability and buoyancy of inflatables with the smooth ride of a rigid deep V-hull. The concept was embraced by the Coast Guard and lifeguard departments, who used hybrids for rescue work in rough conditions.

The term "hybrid" has since fallen into disfavor among manufacturers. It sounded like it should be applied to a vegetable or a mutant rather than to a boat. Today's buzzword is RIB, an acronym for Rigid Inflatable Boat. That's almost a contradiction of terms, but it works and that's what counts. Several manufacturers now make RIBs in Europe for local consumption, but few have reached our shores. The newest which has is the Radhial 500, the latest offering from the Italian firm responsible for the revolutionary inflatable with a zipper and inner tubes (SDM Dec. '82).

Although the concept of rigid inflatables makes sense, it involves a few compromises in the areas of portability and interior space. The V-floor seriously limits carrying capacity for scuba gear and passengers. Furthermore, attaching flexible tubes to a rigid hull taxes the limits of the bonding agent, occasionally resulting in delamination. Radhial has addressed these problems ingeniously and seems to have solved two of them.

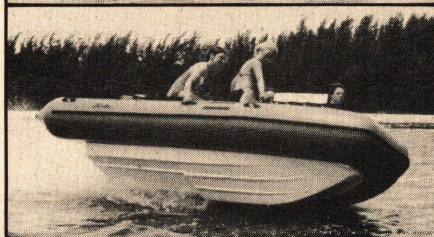
Double hull fiberglass construction results in a flat floor, which accommodates more diving gear than the V-floor usually found in this type of boat. A flat floor also makes it easier for people to move around. Lockable storage compartments are built into the bow and the stern. Both are generous in size, the stern compartment accommodating up to six scuba tanks. Channels under the locking lids permit water runoff to keep things inside relatively dry. The storage compartments double as seats for passengers. With the buoyancy of five inflatable tubes, no flotation material is needed between the floor and the hull.

Instead of bonding the hull to the tubes, Radhial bolts it. This is possible only because of its inner tube construction. There are two stainless steel bolts every six inches around the entire perimeter of the tubes. The outer tube covering is sandwiched between the fiberglass hull and a unique nylon retainer which gives with the flex of the tubes. The segmented retaining strip has gone through several stages of evolution. In the first prototype a single plastic strip was used, but it cracked when the tubes flexed. Next they



AMERICAN RADHIAL 500 RIB

*for a trip to the
outer limits of
inflatable performance*



The Radhial 500 RIB (Rigid Inflatable Boat) has a fiberglass V-hull bolted to inflatable tubes made of PVC inside and a polyurethane-coated Trevira outside. The combination allows the boat to handle the tightest turns without skidding. Loaded with five passengers and three sets of scuba gear, powered by a 50 hp engine run at top speed, the author couldn't out drive it.

tried aluminum, but it bent. The final solution was a series of nylon bars, each bolted separately. The front of the bar is shaped like an arrow, which fits into a groove in the bar before it. Thus, limited movement is allowed with the flex of the tubes. This breakthrough made it possible to combine Radhial's advanced tube construction with a fiberglass hull.

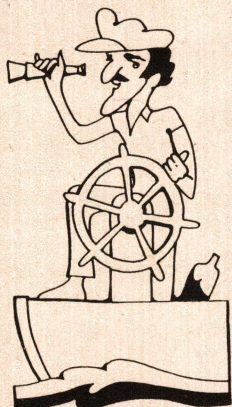
Like most of today's buoyancy compensators, all Radhial boats have inner tubes. Made of a PVC material, the inner tubes hold the air while the outer covering merely protects them. It's made of a tough Trevira fabric coated with polyurethane, manufactured in Germany and called Erstrom. Radhial has exclusive use of Erstrom for inflatable boats. All panels are electronically welded, no glue is used in their construction. A "zipper," of nylon toggles, reinforced with fiberglass, surrounds the perimeter of the tubes. If an inner tube is damaged, the toggles are opened and it can be repaired or replaced. Two spare tubes are supplied with each Radhial 500.

The specifications sounded exciting, but the proof of any boat comes in the water. There were only two 500 RIBs in the United States at the time, both in Florida. So Franco Rossi, president of American Radhial, arranged our test of the boat in Fort Lauderdale. Cliff Hunt of Sailor-man, a Radhial dealer, outfitted the test boat with a Suzuki 50 horsepower engine and a remote steering system. He also brought along two lovely young models and three sets of diving gear for photographic purposes.

Loaded with five passengers and three sets of scuba gear, the 500 RIB set off through Fort Lauderdale's inland waterway headed for the sea. The stern compartment provided seating for the driver and a passenger, while the others sat on the tubes. Despite the 23 inch diameter of the tubes, there was plenty of room. Unlike other RIBs, this one provided as much interior space as a regular inflatable. Score a big one for the flat floor.

But it was in open water that the new Radhial really proved itself. At first, Hunt ran it through some maneuvers for photographs. He would head straight for our chase boat at high speed, then veer off at the last moment. It looked impressive and the passengers seemed to be having a lot of fun, so I asked to take the wheel. The boat went up on an immediate plane as soon as power was applied. It cut right through the light chop and two to three foot swells. After hitting a couple of sharp turns, I began to get the feel of the boat and tried to push it to its limits. I couldn't. At the 50 hp Suzuki's top speed, about 30 knots, the 500 RIB handled the tightest turns and directional changes with ease. At no time did the boat skid or the prop cavitate. When leaning to its extreme in a

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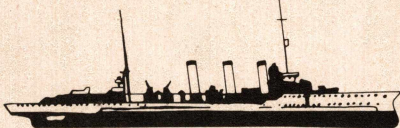
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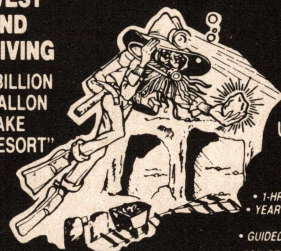
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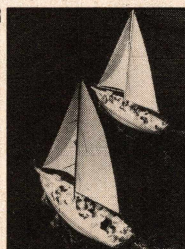
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RADHIAL 500 RIB

turn, we could feel the inside pontoon hit the water and dig in for stability. Perhaps with its maximum rated 80 horsepower engine and no passengers, one could make this boat lose adhesion to the water. But I gave it worse treatment than any diver normally would and it just came back asking for more. I've never driven an inflatable boat which rides or handles as well as this. Score another one for the fiberglass hull.

According to Franco Rossi, the hull was designed by Molinari, Italy's top designer of racing boats. It is a step design, with chines in the front portion. The resulting hydrofoil effect allows the 500 RIB



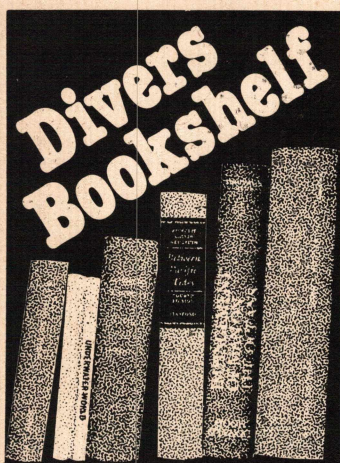
RADHIAL 500 RIB

Length	16'4"
Beam	7'4"
Tube diameter	23"
Interior width	4'6"
Weight	462 lbs.
Payload	2,142 lbs.
Capacity	8 or 6 divers
Number of chambers	5
Material (tubes)	PVC
Material (cover)	Trevira/polyurethane
Hull	Fiberglass
Max. horsepower	80
Color	Red-orange
Price	\$6,900

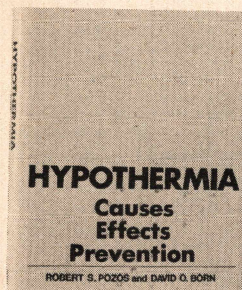
to plane with less horsepower. According to factory specs, it will easily reach planing with a 20 horsepower engine and four persons aboard.

At the present time, the entire boat is made in Italy and shipped over intact. In the future, the hulls will be made in Florida and the boat will be assembled there. This will reduce shipping costs and hold down the price.

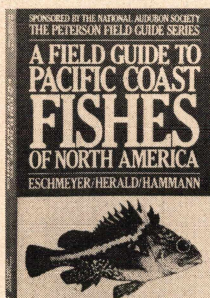
The cost of all this high technology is a hefty one compared to other inflatables, \$6,900. But compared with other RIBs, that's right in the ballpark. For that price, the boat comes complete with removable wooden bowdodger, paddles, three-way hand pump, the aforementioned two spare tubes and a tool kit. Anyone wishing to explore the outer limits of inflatable boat performance should take a look at this one. For further information contact American Radhial, 136 Charwood Circle, Rochester, New York.



Samantha—The latest edition of this book by David Pilosof comes in soft cover and features a host of poses of underwater model Samantha Bond and creatures of the deep. It includes her thoughts on the photo sessions. \$21.95. Helix, 325 West Huron St., Chicago, Illinois 60610.



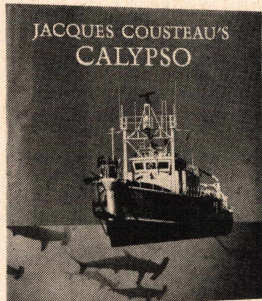
Hypothermia—Describes the factors that influence temperature regulation in the body and relates these to their effects on the occurrence of hypothermia. Methods to prevent hypothermia are discussed. \$14.95. New Century Pub., 275 Old New Brunswick Rd., Piscataway, NJ 08854.



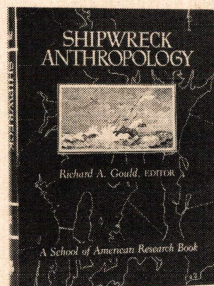
Field Guide to Pacific Coast Fishes of North America—Over 600 species of marine fish are described, virtually all species found down to 650 feet. The book contains over 525 illustrations with 211 in color. Information on size, range and habits. \$12.95. Houghton Mifflin Co., Boston.



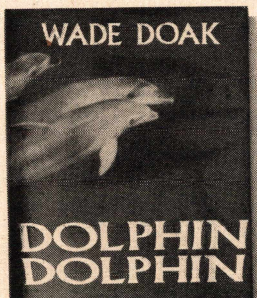
The Underwater Photographer's Handbook—By Peter Rowlands this book covers the principles of U/W photography: lighting, subjects, etc. It is illustrated with photos, diagrams and drawings. \$20.50. Van Nostrand Reinhold Co. Inc., 135 W. 50th St., New York, NY 10020.



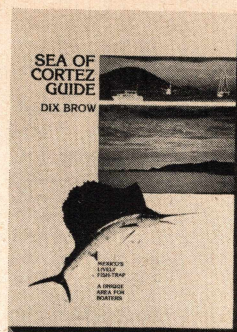
Jacques Cousteau's Calypso—By Jacques Cousteau and Alexis Sivirine this book includes many photos of the Calypso, crew activities and marine life. Includes drawings of the ship's stages of evolution. \$37.50. Harry N. Abrams, Inc., Pub., 110 E. 59th St., NY, NY 10022.



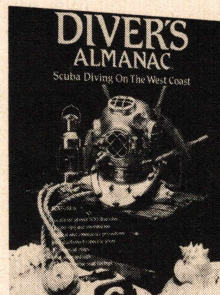
Shipwreck Anthropology—This book, edited by Richard A. Gould, discusses aspects of shipwreck study including: shipwreck archaeology as anthropology, wrecks of the Spanish Armada and Battle of Britain, and others. \$27.50. University of New Mexico Press, Albuquerque, NM.



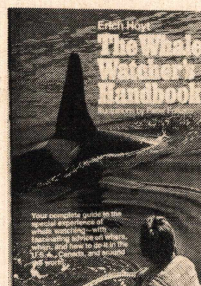
Dolphin Dolphin—By Wade Doak, this book follows the efforts of the author and others to interact and communicate with wild dolphins off New Zealand. Some approaches include "dolphin" suits and music. \$32.50. Sheridan House, 175 Orawaupum St., White Plains, NY 10606.



Sea of Cortez Guide—With 115 photos and 96 charts, this guide by Dix Brow covers the area from San Felipe to Cabo San Lucas along Baja California and from El Golfo to Mazatlan on the mainland. Anchorages, launching. \$19.95. W. Marine Enterprises, Box Q, Ventura, CA 93002.



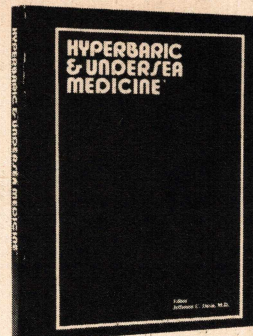
Divers Almanac—Covering the coast from Southern California to British Columbia, this book includes maps of the dive sites. A calendar of charter dates is available for \$7.95 and the Almanac is \$11.95. Adventure Series Productions, P.O. Box 1119, Jacksonville, Oregon 97530.



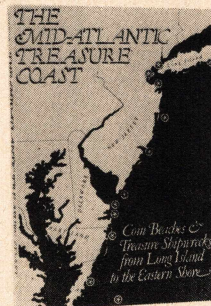
The Whale Watcher's Handbook—With illustrations by Pieter Folkens, this guide by Erich Hoyt includes detailed descriptions of a host of common and rare whales and dolphins. Maps, charts and the locations of hundreds of whale watching sites. \$12.95. Doubleday & Company.



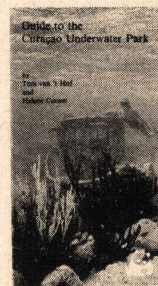
Reproduction in Reef Fishes—By marine biologist Dr. R.E. Thresher this book discusses the spawning patterns of over 70 families of reef fishes found in marine aquaria. Many illustrations and photos of the animals. \$39.95. T.F.H. Pub., 211 W. Sylvania Ave., Neptune, NJ 07753.



Hyperbaric and Undersea Medicine—Edited by Jefferson C. Davis, M.D., this book is a collection of 40 papers written by experts in the field of undersea medicine. Accident case histories. \$40 plus \$2.50 postage and handling. Best Pub., P.O. Box 1978, San Pedro, CA 90732.



The Mid-Atlantic Treasure Coast—Written by treasure salvor Stephen M. Voynick, this book includes old photos, maps and newspaper stories documenting shipwreck and coin beach locations in this area. \$9.95. Middle Atlantic Press, Box 263, Wallingford, Pennsylvania 19086.

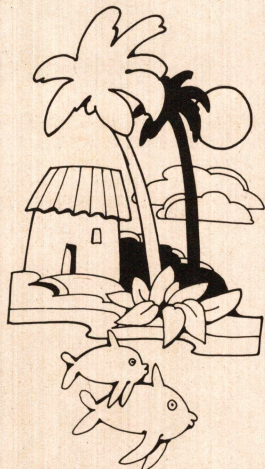


Guide to the Curacao Underwater Park—By biologist Tom van't Hof and Heleen Cornet the guide covers 16 moored dive sites and includes a map and tips for divers and snorkelers. Many color and black and white photos. \$3.95. Helix, 325 West Huron St., Chicago IL 60610.



Touch the Sea—By divemaster Dee Scarr, illustrated with 69 color photos by the author and others, this book describes the methods she uses to handle and feed marine animals, including some considered dangerous. \$12.95. Avon Books, 1790 Broadway, New York, NY 10019.

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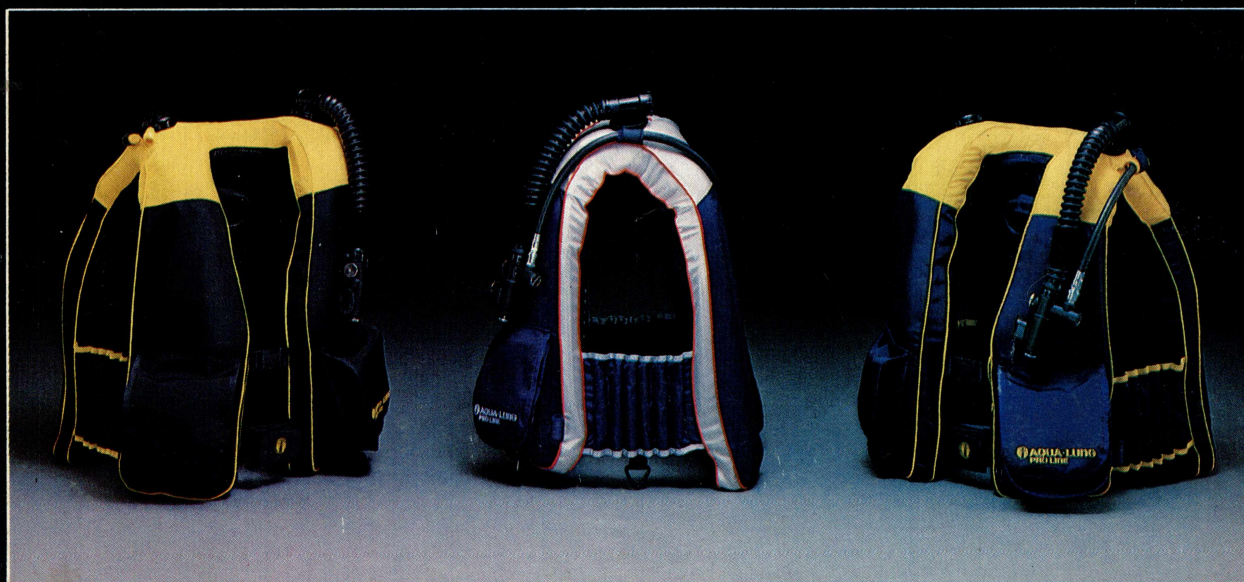


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